**Notebook, N-88-02-17**

This notebook, which is not standard sized, covers the period February-March 1888. It was used primarily by James W. Gladstone for notes, tables, and calculations regarding fiber carbonization, condensers, "thermo battery" experiments, and the bleaching of tobacco. There are also scattered notes by Arthur E. Kennelly. Inserted into the book are about 20 loose pages containing instructions from Edison to Gladstone, a note from Edison to John [Ott?] relating to Gladstone's work, and various notes by Gladstone and Kennelly. The spine is labeled "56." The pages are unnumbered, and the book has been used in both directions. Several pages have been removed from the book. Approximately 140 pages have been used.

# Experimental Results.

No 41 Carbonization of fibres blotting paper etc. Mains

| Fibres etc | Carbonized in | Set current through |
|---|---|---|
| Rosewood | Pot Carbon | 15 volts |
| Black Walnut | " Carbon | 15 " |
| Elm | " Plumbago | 12 " |
| Birch | " Carbon | 15 " |
| Hickory | " Carbon | 18 " |
| Willow | " Plumbago | 15 " |
| Rock Maple | " Carbon | 15 " |
| Lancewood | " Carbon | 23 " |
| Jute Twist 1/32 in | " Carbon | 12 " |
| Jute " " " | " Plumbago | 12 " |
| Manilla " " " | " Carbon | 18 " |
| Manilla " " " | " Plumbago | 15 " |
| Cotton " " " | " Plumbago | 18 " |
| Broomcorn Split | " Carbon | 18 " |
| Broomcorn Split | " Plumbago | 18 " |
| Broomcorn Scraped | " Carbon | 15 " |
| Blotting paper pressed | " Carbon | 40 " |
| Blotting paper pressed | " Plumbago | 40 " |

Crucibles used (Iron box melted at bottom)

Bright red heat. Time from 2 to 3 hours - Boiled gradually in hot ashes under pot stove.

Finished expt. 17 February 1888.

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## Condenser Experiment.

Remade condenser No 318 putting in 6 sheets fine paraffin paper or 3 sheet thick do
It contains 100 sheets foil in 3 equal divisions
Made condenser No 320 using 8 sheet of thin paraffin paper for insulation total Capacity
It contains 100 sheets foil in 3 equal divisions –

100

## Thermo Battery Experiment –

| Use as bases. | Oxidizers |
|---|---|
| Glacial Phosphoric Acid | Peroxide Lead |
| Chloride Zinc. | Peroxide Manganese. |
| Sod. di Hydrogen Phosphate | Chlorate of Potash. |
| Di-Sod. Hydrogen Arsenate. | Nitre. |
| Boric Acid. | Chromic Acid. |
| Hydrogen Potassium Hyposulphate | Bichromate Potash. |
| Hydrogen Borate. | Bichloride Tin. |
| Hydrogen Basic Sulphate. | Peroxide Iron. |
| Ammonium Hyposulphate. | Permanganate Potash. |
| Nitrate Ammonia. | Carbolic Acid. |
| Water Glass. | Sulphuret of Bisquium. |
| Caustic Soda. | Red Lead. |

Apparatus and Electrodes and Directions
Jin × 1/4 Test Tubes. over bunsen burner.
Ordinary Sangent Galvanometer Coarse & fine coils.
Electrodes insulated in cover of test tube.
Carbon & silver
Carbon & platinum
Carbon & Iron
Carbon & Nickel
Carbon & Copper
Mel portion of Base G.P.A. and put in thimbleful of peroxide manganese. Heat the test tube just as high as it will stand. Stir the liquid with the electrodes and take the deflections on both coils –
See that they start from zero. Use switch –
See if there is much polarization by holding current closed for a little while.
Clean test tube – put in fresh charge of Glacial Phosphoric Acid, and then put in thimbleful of peroxide lead, and so on, using as base, Glacial Phosphoric Acid and successively putting in each of the oxidizers on list –
Then take Chloride Zinc as base successively putting in each of the oxidizers on list and so on breaking each base on list with each of the oxidizers in rotation.

| Bases | Oxidizer | Positive Electrode | Negative Electrode | Tangent Galvanometer deflections Readings taken every minute. Coarse 1.5 resist. | | | | Fine 80 ohm resist. | | | | S Circuit 1 min. Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Glacial Phosphoric Acid | Chlorate of Potash | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | Bioxide of Manganese | Iron | Carbon | | 19 | | | 45 | | | | 15 | 35 |
| " " | " | Platinum | Carbon | | 17 | | | 39 | | | | 15 | 39 |
| " " | " | Copper | Carbon | | 22 | | | 49 | | | | 45 | 40 |
| " " | " | Platinum | Carbon | | 10 | | | 29 | | | | 3 | 15 |
| " " | " | Carbon | Platinum | | 3 | 4 | | 10 | | | | 3 | 15 |
| " " | Nitre | Copper | Carbon | 35 | 53 | 55 | | 46 | 55 | 55 | | 47 | 50 |
| " " | " | Iron | Carbon | 20 | 29 | 33 | | 36 | 39 | 45 | | 11 | 30 |
| " " | " | Nickel | Carbon | 25 | 10 | 5 | | 40 | 25 | 15 | | 5 | 15 |
| " " | " | Silver | Carbon | 20 | 33 | 29 | | 45 | 45 | 45 | | 21 | 40 |
| " " | " | Carbon | Platinum | 20 | 20 | 20 | | 15 | 13 | 10 | | 19 | 7 |
| " " | Chromic Acid | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | Bichromate of Potash | Iron | Carbon | 22 | | | | 55 | | | | 18 | 46 |
| " " | " | Copper | Carbon | 10 | | | | 44 | | | | 9 | [illegible] |

Bad Mat.

| Bases. | Acid or Jors | Positive Electrode | Negative Electrode | Galvanometer readings every minute. Coarse Coil | | | | Fine Coil | | | | S. Circuit 2m. Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Glacial Phosphoric Acid | Bichromate of Potash | Nickel | Carbon. | 14 | | | | 15 | | | | 2 | 13. |
| " " | " | Silver | Carbon. | 0 | | | | 14 | | | | 0 | 1. |
| " " | | | | 0 | | | | 0 | | | | 0 | 0. |
| " " | Peroxide Lead | Iron | Carbon. | 10 | 23 | 25 | | 11 | 43 | 50. | | 30 | 45. |
| " " | " | Carbon | Platinum | 20 | 15 | 5 | | 29 | 25 | 29. | | 0 | 4 |
| " " | " | Nickel | Carbon. | 3 | 7 | 5 | | 13 | 23 | 21 | | 6 | 15 |
| " " | " | Silver | Carbon. | 45 | 53 | 49 | | 44 | 51 | 58 | | 53 | 53. |
| " " | " | Copper | Carbon. | 33 | 39 | 40 | | 53 | 53 | 54 | | 40 | 53. |
| " " | Peroxide Iron | Carbon | Platinum | 0 | 0 | 0 | | 1 | 2 | 0 | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | Bichloride Tin | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| Potassium | (Iron) | Tannate of Iron | Silver | Carbon | 15 | 0 | 0 | 55 | 2 | 0 | | 10 | 50 |
| " | " | " | Platinum | Carbon | 30 | 10 | 15 | 25 | 38 | 40 | 49 | 45 | 40 |
| " | " | " | Silver | Carbon | 38 | | | 37 | | | | 33 | 35 |
| " | " | " | Nickel | Carbon | 40 | | | 38 | | | | 50 | 45 |

| Bases. | | Oxidizers | P. Electrode | N. Electrode | Galvanometer readings every minute — Coarse Coil | | | | Fine Coil | | | | S. Circuit 2m — Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Potash | Platinum | Phosphoric Acid | Carbon | Platinum | | 5 | | | 3 | | | | 4 | 6 |
| | " | Bimanganate of Potash | Iron | Carbon | 2 | 1 | 1 | | 2 | 5 | 6 | | 1 | 7 |
| | " | | Copper | Carbon | 15 | 15 | 17 | | 43 | 45 | 47 | | 17 | 46 |
| | " | | Carbon | Platinum | 5 | 6 | 4 | | 21 | 17 | 18 | | 3 | 7 |
| | " | | Nickel | Carbon | 5 | 3 | 3 | | 13 | 11 | 6 | | 2 | 10 |
| | " | | Silver | Carbon | 15 | 11 | 11 | | 40 | 36 | 35 | | 10 | 33 |
| Red Lead | ✓ | Sulphuret of Potassium | Copper | Carbon | 45 | 55 same off | | 5 C | 55 | 33 | 5 C | | 28 | 27 |
| Sulphur | ✓ | | Nickel | Carbon | 40 | 23 | | | 35 | 29 | | | 23 | 26 |
| | ✓ | | Iron + Carbon | | | 30 | 32 | | 61 | 34 | | | 28 | 38 |
| Oxalic | ✓ | | Carbon | Platinum | 8 | 6 | 6 | | 15 | 6 | 6 | | 8 | 8 |
| | ✓ | | Silver | Carbon | 15 | | | | 12 | | | | 18 | 20 |
| | | Red Lead | Copper + | Carbon | 13 | 13 | 10 | | 49 | 45 | 40 | | 9 | 40 |
| | | | Iron | " | 5 | 5 | 5 | | 15 | 17 | 17 | | 5 | 7 |
| | | | Silver | | 5 | 7 | 10 | | 18 | 25 | 29 | | 9 | 24 |
| | | | Carbon | Platinum | 4 | 3 | 3 | | 18 | 10 | 12 | | 3 | 10 |
| | | | Nickel | Carbon | 7 | 5 | 5 | | 19 | 33 | 21 | | 5 | 5 |
| | Chloride of Zinc | Bioxide Lead | | | | | | | | | | | | |
| | " | " | | | | | | | | | | | | |
| | " | " | | | | | | | | | | | | |
| | " | " | | | | | | | | | | | | |
| | " | " | | | | | | | | | | | | |
| | " | " | | | | | | | | | | | | |
| | " | Bioxide of Manganese | | | | | | | | | | | | |
| | " | " | | | | | | | | | | | | |

| Bases | Oxidizers | P Electrode | N Electrode | Low ~~[illegible]~~ Red ~~[illegible]~~ ~~[illegible]~~ | | | | | | | | After S Circuit 2m. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | a | b | $a^s$ | $b^c$ | a | b | $a^c$ | $b^{sc}$ | Coarse | Fine |
| Chloride Zinc | Bioxide of Manganese | | | | | | | | | 1230 | | 2.358 | |
| " " | | | | | | | | | | 23 | | 34 | |
| " " | Chlorate Potash | | | | | | | | | 1272 | | | |
| " " | " | | | | | | | | 3708 | | | 0432 | |
| " " | " | | | | | | | | | | 76 | 74 | |
| " " | " | | | | | | | | 3955 | | | | |
| " " | " | | | | | | | | | 77 | 08 | 172 | |
| " " | Nitre | | | | | | | 316 | | 116 | | 404 | 86 |
| " " | " | | | | | | | 2765 | | 4 | | 12 0258 | |
| " " | " | | | | | | | 3055 | | 56 | | | |
| " " | " | | | | | | | 1302 | | 61 | | 2 | 0.0772 |
| " " | " | | | | | | | | | | | | 1.5 |
| " " | " | | | | | | | 1557 | | 7 | | 4 | 120258 0 |
| " " | " | | | 1111 | | | | | | | | | 300 |
| " " | Chromic Acid | | | 75 | | | | | | | | | |
| " " | " | | | 2322 | | | | | | | | | |
| " " | " | | | 333 | | | | | | | | | |
| " " | " | | | 5552 | | | | | | | | | |
| " " | " | | | 75 | | | | | 2477 | | | | |
| " " | " | | | | | | | | 34 | | | | |
| " " | " | | | | | | | | 9908 | | | | |
| " " | " | | | 28 | 4416 | | | | 7431 | | | | |
| " " | " | | | 348564 | | | | | 4018 | | | 2 2263 | |
| " " | " | | | | | | | | 4 | 2169 | | 4 21 | |
| " " | Bichromate of Potash | | | 277 | 3056 | | | | | | | 2 4. | |
| " " | " | | | 126 | 33 | | | | 1263 | 27 | | | |
| " " | " | | | 1509 | 18 | | | | | | | | |
| " " | " | | | | 2 | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | Bichloride Tin | Iron | Carbon | 60 | 40 | 31 | 20 | 6 | 4 | 8 | 3 | | |
| " " | " | Copper | Carbon | 60 | 4 | 16 | 13 | 8 | 17 | 11 | 10 | | |

| Bases | Oxidizers | P. Electrode | N. Electrode | Low Carbon Steel Copper Col. Copper | | S. C. 2 min Copper | | Red Heat 5 minute Red Iron Col. Copper | | After Cooling Copper | | Now Current 2 m. Copper Iron |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Copper | Iron | Copper | Iron | Copper | Iron | Copper | Iron | |
| Chloride Zinc | Bichloride Iron | Nickel | Carbon | 2 | 19 | 1 | 1 | N 7½ S 5 | N 7 S 8 | N 11 | N 15 | |
| " | " | Silver | Carbon | 25 | 12 | 12 | 12 | 13 | 20 | 9 | 16 | |
| " | " | Carbon | Plat | 5 | 8 | 2 | 8 | | | | | |
| " | Peroxide Iron | | | | | | | | | | | |
| " | " | | | | | | | | | | | |
| " | " | | | | | | | | | | | |
| " | " | | | | | | | | | | | |
| " | " | | | | | | | | | | | |
| " | Permanganate Potash | Iron | Carbon | Copper 32 | Iron 30 | Sort 2 min Copper 34 | Iron 30 | 26 | 29 | 30 | 25 | |
| " | " | Copper | Carbon | 40 | 32 | 32 | 22 | 27 | 22 | 17 | 17 | |
| " | " | Nickel | Carbon | 13 | 15 | 10 | 12 | 7 | 6 | 3 | 2 | |
| " | " | Silver | Carbon | 16 | 25 | 5 | 18 | 15 | 10 | 7 | 9 | |
| " | " | Platinum | Carbon Pt | 3 | 5 | 1 | 23 | — | — | — | — | |
| " | Carbolic Acid | Carbon | | | | | | 20 | 19 | 15 | 13 | |
| " | " | Iron | C | 21 | 6 | 21 | 6 | 2 | 3 | 1 | 1 | |
| " | " | Cu | Carbon | 11 | 11 | 6 | 3 | 5 | 5 | 10 | 25 | |
| " | " | Ni | | 3 | 15 | 8 | 15 | 5 | 15 | 6 | 13 | |
| " | " | Ag | | 18 | 24 | 16 | 31 | 13 | 26 | 11 | 27 | |
| " | " | Pt | | 6 | 8 | 3 | 1 | 4 | 16 | 5 | 4 | |
| " | Sulphuret of Potassium | Iron | | 3 | 4 | 3 | 4 | 11 | 26 | 19 | 20 | |
| " | " | Cu | | 6 | 19 | 8 | 11 | 18 | 24 | 15 | 19 | |
| " | " | Ni | | 12 | 36 | 5 | 15 | 2 | 15 | 4 | 12 | |
| " | " | Ag | | 8 | 6 | 5 | | 14 | 26 | 5 | 15 | |
| " | Red Lead | Pt | | 4 | 6 | | | 4 | 10 | 3 | 11 | |

| Bases | Oxidizers | P Electrode | N Electrode | At Intervals of minute - Coarse Coil | Fine Coil | After S.C. 2 min. Coarse | Fine |
|---|---|---|---|---|---|---|---|
| Chloride Zinc | Red Lead | | | | 1192 / 32 | 2146 / 24 | |
| " " | " | | | | 2384 | 5584 | |
| " " | " | | | 754 / 32 | 3576 | 6138 | |
| " " | " | | | 1508 | 3571 / 78 | | |
| Sodium & Hydrogen Phosphate | Peroxide Lead | | | 2263 | 2065 / 52 | 07 29 6 11 | |
| " " | " | | | 2412 / 78 | 2705 | 3.6 4 8 2 | |
| " " | " | | | 1930 24 | 2775 / 32 | 10 9 4 4 6 | |
| " " | " | | | 1655 96 | 1094 | | |
| " " | " | | | 1551 48 11 | 1871 | | 1 3/4 |
| " " | Peroxide of Manganese | | | 1094 46 | 1883 | | 218.88 / 18 |
| " " | " | | | | 3/2 / 1/2 | | 1 1/2 / 3/4 |
| " " | " | | | 7172 | | | 237 / 365.0 |
| " " | " | | | 72 | | | |
| " " | " | | | | 1129 / 32 | | 29.20 |
| " " | Chlorate Potash | | | 1459 32 / 3011 | 2858 | | |
| " " | " | | | | 2817 | | |
| " " | " | | | | 4572 / 78 | | |
| " " | " | | | | 3658 / 26 | | |
| " " | " | | | | 3069 / 8 | | |
| " " | " | | | | 3566 / 14 | | |
| " " | Nitre | | | | 4499 | | |
| " " | " | | | | 2473 / 23 | | |
| " " | " | | | | | | |
| " " | " | | | | | | |
| " " | " | | | | | | |
| " " | " | | | | | | |

| Bases | Oxidizers | P Electrode | N Electrode | At Intervals of minute: Coarse Coil | | | | Fine Coil | | | | After S Circuit 2m: Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sodium Di Hydrogen Phosphate | Chromic Acid | | | 60 | 1733 | | | 578 | | | | 1733 | |
| " " | " | | | 30 | 578 | | | | | | | | |
| " " | " | | | 55 | 1.429 | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | Bichromate of Potash | | | | | | | | | | | | |
| " " | | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | Bichloride Tin | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | Peroxide Iron | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | Permanganate of Potash | | | | | | | | | | | | |
| " " | | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |

578
32
1156
1734
18496
78
147968
129472
1444688
058383
5588
58
1.

1733
32
6932
5199
55922
29461
058383
294610
147.

1429
32
2858
4287
45728
78
365824
320096
3566784
058385
26829
4½
23534

| Bases | Oxidizers | P Electrode | N Electrode |
|---|---|---|---|
| Sodium di Hydrogen Phosphate | Permanganate of Potash. | | |
| " " | Carbolic Acid | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Sulphuret of Potassium | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Red Lead. | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| Di Sodium Hydrogen Arsenate | Peroxide Lead | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Peroxide of Manganese | | |

At Interval of minute

| Coarse Coil | | Fine Coil | | Effect S Circuit 2m | |
|---|---|---|---|---|---|
| | | | | Coarse | Fine. |
| 94 | 1.377 | | | 1.377 | |
| 21 | 381 | 384 | | 94 | |
| 56 | 1.4183 | 21 | | 5552 | |
| 21 | | 363 | | 4131 | |
| | | 2064 | | 16862 | |
| | | 75 | | 2931 | |
| | | 384 | | .07293 | |
| | | 768 | | | |
| | 11853 | 1102 | | | |
| | 94 | 2012 | | | |
| | 5932 | 21 | | | |
| | 4149 | 9653 | | 07168 | |
| | 0501 | 4016 | | 23432 | |
| | 2511 | 0.9554 | | 11716 | |
| | 7563 | 0.9549 | | 08201 | |
| | | 0.5555 | | | |
| | | 07 | | | |
| | 05432 | 09516 | | | |
| | 2521 | 07563 | | | |
| | 1265 | 2013 | | | |
| | 08237 | 70 | | | |

| Bases | Oxidizers | P. Electrode | N. Electrode | At intervals of minute – Coarse Coil | Fine Coil | 4 Hour Circuit 2m. Coarse | Fine |
|---|---|---|---|---|---|---|---|
| Bi Sodium Hydrogen Arsenate | Peroxide of Manganese | | | | | | |
| " | Chlorate Potash | | | 4.711 / 24 / 10844 / 14433 / 16 0174 / 5 0.57 / 24 0261 | 1609 / 12 / 9202 / 4803 / 57232 / 78 / 40956 / 3 1564 / 19 9609 / 24 02 | 16 0174 / 16 0174 | |
| " | Nitre | | | | | 17 6191 / 16 0174 | |
| " | Chromic Acid | 1.151 / 32 / 2302 / 3453 / 36832 / 29 4656 / 18 9224 / 1000 / 1871.2 | | 1.904 / 24 / 7856 / 5 7956 / 6677 / 3338 / 1621 / 100 / 2004 / 26708 / 333 / 3043 | 1.594 / 1/4 | 4 17 6191 / 4444 | 2.607 / 24 / 9901 / 33 / 18802 / 2903 / 28832 / 78 / 23 0656 / 2 0824 / 24 5496 / 12 2956 / 9194 / 58 |
| " | Bichromate of Potash | | | | | 2.607 / 24 / 10 4428 / 7854 / 18654 / 4319 / 23957 | |
| " | Bichloride Tin | | | | | 17726 / 4443 | 2215 |

| Bases | Oxidizers | P Electrode | N Electrode | At Intervals of minute - Coarse Coil | | | | Fine Coil | | | | After S. Circuit 2m. Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Di Sodium Hydrogen Arsenate | Bichloride Tin | | | | | | | | | | | | |
| " | " | 5.681 | | 78 / 4711 | 56. / 1483 | | | 4711 | | | | 1.483 | |
| " | " | | | | | | | | | | | | |
| " | Peroxide Iron | | | 77 / 4837 | 51. / 1236 | | | | | | | | |
| " | " | 1601 | | 80 / 5681 | 58 / 1601 | | | | | | | | |
| " | Permanganate of Potash | | | 66 / 2248 | 36. / 727 | 52 / 1281 | | | | | | 1281 | |
| " | " | | | 69 / 2607 | 66. / 2248 | | | | 1/2 | 37479 | | | |
| " | Carbolic Acid | | | | | | | | | | | | |
| " | Sulphuret of Potassium | 88638 | | | | 191. | | | | | | | |

5152
34
20608
15456
175168
[illegible]

17576
157644
4 ) 394

2.248
32
4496
6744
71936
[illegible]

5.681
34
22724
17043
193154
.577
.289731

1601
32
3202
4803
51232
78
409856
358624
3996096
26973
10987

2.607
34
10428
7821
88638
13
1152294

18844
14133
160174
78
128139
112121
1249357
62467
187402

1.483
33
4449
4449
48956
78
379648
332192
370568
1874
182

37479

1281
32
2562
3843
40992

| Bases | Oxidizers | P. Electrode | N. Electrode |
|---|---|---|---|
| Dr. Sodium Hydrogen | Red Lead | | |
| Arsenate " | " | | |
| " " | " | | |
| " " | " | | |
| Boric Acid | Peroxide Lead | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Peroxide of Manganese | | |
| " " | " | | |
| " " | " | | |
| " " | Chlorate Potash | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Nitre | | |
| " " | " | | |
| " " | " | | |

At Intervals of - minute.

| Coarse Coil | | | | Fine Coil | | | | After Switch 2 m. Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|
| 72 | 49 | 55 | 60 | 48 | | | | | |
| 300 | 1151 | 1132 | 1733 | 1111 | | | | | |
| | | | | | 1151 | | | 3051 | |
| | | | | | 32 | | | 32 | |
| | | | | | 2302 | | | 3024 | |
| | | | | | 3453 | | | 6 | 243 |
| | | 1439 | | | 3682 | | | 10 | 17511 |
| | | 55 | | | 78 | | | 5 | 327 |
| | | 2455 | | | | | | 15 | 17131 |
| | | 4377 | | 2936 | 56 | | | | |
| | | 4577 | 38 | 2778 | 24 | | | 1111 | |
| | | | 78 | | | | | 2 | |
| | 36 | 58 | 24 | 2171 | 96 | | | 1111 | |
| | 50 | 009 | 6 | 1713 | 1 | | 1/4 | 1371 | |
| | 3566 | 584 | | | | | | 1555 | 1017 |
| | 1713 | | | 1300 | 8 | | | 21 | 329 |
| | 7995 | | | | | | | 5466 | |
| | | 2 | | | | | | 24 | 64 346 |
| | | | 1017 | 1627 | 5 | | | 23 | 3086 |
| | | | 4 | 1017 | 4 | | | 15 | 131 |
| | | | 4190 | 1112 | 25 | | | 120 | |
| | | | 262 | 488 | | | | | |
| | | | 4 | | | 1733 | | | |
| | | | 52 | | | 32 | | | 2¾ |
| | | | | | | 3466 | | | 1½ |
| | | | | | | 5198 | | | |
| | | | | | | 5456 | | | |
| | | | | | | 78 | | | |
| | | | | | 4 | 3648 | | | |
| | | | | | 3882 | 92 | | | |
| | | | | | 4322 | 568 | | | |
| | | | | | 1713 | 1 | | | |
| | | | | | 2754 | 25 | | | |

| Bases | Oxidizers | P Electrode | N Electrode |
|---|---|---|---|
| Boric Acid | Nitric | | |
| " " | Chromic Acid | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Bichromate of Potash | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Bichloride Tin | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Peroxide Iron | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Permanganate of Potash. | | |
| " " | " | | |

| At Intervals of minute - Coarse Coil | | | Fine Coil | | | | | | Effect of Circuit 2m. Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|---|
| 74 | 47 | 49 | | | | | | | 3.489 | |
| | 1073 | | | | | | | | 34 | |
| | | | | | 1151 | | | | | |
| | | | | | 32 | | | | 7924 | |
| | | | | | 3303 | | | 10 | 43 | |
| | | | | | 3483 | | | | | |
| | | | | | 3632 | | | 11 | 3564 | |
| | | | | | 71 | | | 59 | 177 | |
| | | | | | 3946 | | | 177 | 531 | |
| | | | | 25 | 8214 | | | | | |
| | | | | 25 | 7296 | | | 1 | 2.366 | |
| | | | | 17 | 13 | | | | 59 | |
| | | | | 10 | 97 | | | | 29 | 57 |
| | | | | | 1073 | | | | | |
| | | | | | 32 | | | | | |
| | | | | | 2146 | | | | | |
| | | | | 3 | 219 | | | | | |
| | | | | 3 | 3326 | | | | 11835 | |
| | | | | | 71 | | | | 9 | |
| | | | | 27 | 7648 | | | 4 | 10651 | |
| | | | | 26 | 6352 | | | | 266. | |
| | | | | 26 | 7208 | | | | | |
| | | | | 19 | 958 | | | | | |
| | | | | 1 | 509 | | 3/4 | | | |
| | | | | 0 | 029 | | | | | |
| | | | | 1 | 48 | | | | | |

| Bases | Oxidizers | P Electrode | N Electrode |
|---|---|---|---|
| Boric Acid | Permanganate of Potash | | |
| " | " | | |
| " | Carbolic Acid | | |
| " | " | | |
| " | " | | |
| " | " | | |
| " | " | | |
| " | " | | |
| " | " | | |
| " | Sulphuret of Potassium | " | " |
| " | " | | |
| " | " | | |
| " | " | | |
| " | Red Lead | | |
| " | " | | |
| " | " | | |
| " | " | | |
| Hydrogen Potassium & Hydrosulphate | Peroxide Lead | | |
| " | " | | |
| " | " | | |
| " | " | | |
| " | Peroxide of Manganese | | |
| " | " | | |

| At Intervals of minute | | | | | | | | | | After S. Circuit 2min | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Coarse Coil | | | | Fine Coil | | | | | | Coarse | Fine |
| 70 | 460 | | | | 1026 | | | | | 2.75 | |
| | | | | | 32 | | | | | 24 | |
| | | | | | 2072 | | | | | | |
| | | | | 3 | 108 | | | | | 1 00 | |
| | | | | 9 | 1552 | | | | | 2.5 | |
| | | | | | 78 | | | | | 13.5 | |
| | | | | 25.5 | 16 | | | | | 4.7 | |
| | | | | 232.0 | 4 | | | | | .13 | 2.5 |
| | | | | 255 | 56 | | | | | | |
| | | | | 1252.1 | | | 14 | | | 25.5 | |
| | | | | 1933 | | | | | | | |

| Bases | Oxidizers | P Electrode | N Electrode | At Intervals of minute - Coarse Coil | | | | Fine Coil | | | | After 5 Circuit 2m. Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hydrogen Potassium } Hydrosulphate } | Bicoxalate of Manganese } | | | 64 | 45 | | | | | 1.541 | | 2052 | |
| " | " | | | | | | 32 | | | 35 | | 34 | |
| " | " | | | | | | 71 | | | 1.052 | | | |
| " | " | Chlorate Potash | | | | | 256 | | | 4623 | | 5205 | |
| " | " | " | | | | | 23 | | | 4937 | | 6156 | |
| " | " | " | | | | | 2496 | | | 71 | | 6278 | |
| " | " | " | | | | | 1046 | | | 39496 | | 3251 | |
| " | " | " | | | | | 14500 | | | 2751 | | 10465.2 | |
| " | " | " | | | | | | | | 14636 | | | |
| " | " | " | | | | | | | | 9612 | | 6976 | |
| " | " | " | | | | | | | | 941 | | 7 | |
| " | " | Nitre | | 75 | 62 | | 37 | | | 14 | | 2441 | 1832 |
| " | " | " | | | 1.583 | | 1.641 | | | | | 34 | |
| " | " | " | | | | | | | | 1.882 | | 3726 | |
| " | " | " | | | | | | | | 35 | | 34 | |
| " | " | " | | | | | | | | 3761 | | | |
| " | " | " | | | | | | | | 5446 | | 7944 | 381 |
| " | " | " | | | | | | | | 60324 | | 11205 | |
| " | " | " | | | | | | | | 78 | | | |
| " | " | Chromic Acid | | | | | | | | 45792 | | 12024 | |
| " | " | " | | | | | | | | 1525 | | 6351 | |
| " | " | " | | | | | | | | 4997672 | | 19056 | |
| " | " | " | | | | | | | | 1003 | | | |
| " | " | " | | | | | | | | 2192 | 2/4 | | |
| " | " | " | | | | | | | | | | 127034 | |
| " | " | " | | | | | | | | | | 15 | |
| " | " | Bichromate of Potash } | | | | | | | | | 64 | 1205360 | |
| " | " | " | | | | | | | | | | 451. | |
| " | " | " | | | | | | | | | | | |
| " | " | Bichloride Tin | | | | | | | | | | | |

| Bases | | Oxidizers | P Electrode | N Electrode |
|---|---|---|---|---|
| Hydrogen | Bassium | Bichloride Tin | | |
| Anhydrosulphate | | " | | |
| " | " | " | | |
| " | " | " | | |
| " | " | Peroxide Iron | | |
| " | " | " | | |
| " | " | " | | |
| " | " | " | | |
| " | " | " | | |
| " | " | " | | |
| " | " | Permanganate of Potash | | |
| " | " | " | | |
| " | " | " | | |
| " | " | " | | |
| " | " | Carbolic Acid | | |
| " | " | " | | |
| " | " | " | | |
| " | " | " | | |
| " | " | " | | |
| " | " | Sulphides of Potassium | | |
| " | " | " | | |
| " | " | " | | |
| " | " | " | | |

At Intervals of minute.

| Coarse Coil | | | | Fine Coil | | | | Effects Current on Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|
| 79 | 55 | 57 | | | | 1129 | | 5752 | |
| | 1129 | 1541 | | | | 32 | | 34 | |
| | | | | | | 3555 | | 20605 | |
| | | | | | | 1257 | | 15456 | |
| | | | | | | 1571 | | 17568 | |
| | | | | | | 71 | | 17581 | |
| | | | | 30 | 55 | 44 | | 2752 | |
| | | | | 32 | 69 | 6 | | | |
| | | | | 35 | 67 | 84 | | 350 | |
| | | | | 26 | 7 | | | | |
| | | | | 9 | 39 | | 1/2 | 1/2 | |
| | | | | 75 | | | | | |
| | | | | | | 15241 | | 75168 | |
| | | | | | | 32 | | 13 | |
| | | | | | | 30932 | | 32-77184 | |
| | | | | | | 4623 | | 310 | |
| | | | | | | 4931 | | 3 | |
| | | | | | | 76 | | 11 | |
| | | | | | | 21447 | | 6 | |
| | | | | | | 3415 | | 6 | |
| | | | | | | 37663 | | | |
| | | | | | | 26 | | | |
| | | | | | | 1139 | | | |
| | | | | | | 17 | | | |

| Bases | Oxidizers | P Electrode | N Electrode |
|---|---|---|---|
| Hydrogen Potassium | Red Lead | | |
| Hydrosulphate | | | |
| Hydrogen Borate | Peroxide of Lead | | |
| | Peroxide of Manganese | | |
| | Chlorate Potash | | |
| | Nitre | | |

Intervals of minute –

| Coarse Coil | Fine Coil |
|---|---|

After Circuit 2m.

| Coarse | Fine |
|---|---|

| Bases | Acidizers | P Electrode | N Electrode |
|---|---|---|---|
| Hydrogen Borate | Nitric | | |
| " " | Chromic Acid | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Dichromate of Potash | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Bichloride Tin | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Peroxide Iron | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Permanganate of Potash | | |
| " " | " | | |
| " " | " | | |

At Intervals of minute.

| Coarse Coil | | | | Fine Coil | | | | After 5 Circuit 2m. Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 40 | 44 | 50 | 52 | | | | 2.907 | |
| | 139 | 966 | 1.192 | 1.28 | | | | 34 | |
| | | | | | 139 | | | 116.25 | |
| | | | | | 36 | | | 5721 | |
| | | | | | 1675 | | | 05.1235 | |
| | | | | | 25.17 | | | 44419 | |
| | | | | | 2.6845 | | | 153257 | |
| | | | | | 25 | | | | |
| | | 1.28 | | 3.4784 | | | | | |
| | | 32 | | 1.8793 | | | | 88835 | |
| | | 2.162 | | 2.094 | | | | 177675 | |
| | | 3.2445 | | 1.8.2.17 | | | | 44419 | |
| | | 4.4982 | | 7.6.1.7. | | | | 1.2095 | |
| | | 78 | | | | | | | |
| | | 5.1036 | | | | 966 | | | |
| | | 2.6944 | | | | 32 | | | |
| | | 3.1976 | | | | 1930 | | | |
| | | 1.832 | | | | 2.5.9 | | | |
| | | 15.349 | | | | 3.09.23 | | 4.197225 | |
| | | | | | | 71 | | 2443. | |
| | | 1.192 | | | | 3.4.72.96 | | | |
| | | 32 | | | | 1.6.5.24 | | | |
| | | 2.3.8.24 | | | | 2.4.1.1.36 | | | |
| | | 2.5.76 | | | | 1.832.7 | | | |
| | | 3.5.1441 | | | | 1.9.7.8.6 | | 184 | |
| | | 71 | | | | 555 | | | |
| | | 3.5.1.5.2 | | | | | | 88835 | |
| | | 3.5.0.0.8 | | | | | | 9 | |
| | | 2.6.7.5.2.32 | | | | | | 1.186 | |
| | | 2.6.7.5.2.5 | | | | | | 2.6 | |
| | | 1.6.3.2.5 | | | | | | 305. | |
| | | 1.6.4.3.7 | | | | | | | |

| Bases | Oxidizers | P Electrode | N Electrode |
|---|---|---|---|
| Hydrogen Borate | Permanganate of Potash | | |
| " " | Carbolic Acid | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Sulphuret of Bismuth | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Red Lead | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| Hydrogen Bismuth Sulphate | Peroxide Lead | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Peroxide of Manganese | | |

At intervals of minutes

| Coarse Coil | | | | Fine Coil | | | | After 5 Circuit Bm Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|
| 76 | 58 | 50 | 56 | | | | | 4056 | |
| | 1601 | 1.192 | 1.483 | | | 1.604 | | 34 | |
| | | | | | | 30 | | 1604 | |
| | | | | | | 3205 | | 1048 | |
| | | | | | | 4709 | | 1654 | |
| | | 1.192 | | | | 5123 | | 6827 | |
| | | 32 | | | | 71 | | 2045 | 16 |
| | | 2284 | | | | 4095 | 6 | | |
| | | 2276 | | | | 3158 | 4 | | |
| | | 3147 | | | | 26 | | | |
| | | 26 | | | | 3996 | 96 | | |
| | | 20 5152 | | | | 3158 | | .4095 | |
| | | 2400 5 | | | | 3 | | | |
| | | 39 7532 | | | | 13 3793 | 6 | 1½ | |
| | | 2640 16 | | | | 32 | | 1365 | |
| | | 9579 | 34 | | | | | 9 | |
| | | 1365 | | | | | | 9155 | 596 |
| | | | | | 1483 | | | 34 | |
| | | | | | 34 | | | | |
| | | | | | 2966 | | | | |
| | | | | 4 | 449 | | | | |
| | | | | | 4 7456 | | | | |
| | | | | | 71 | | | | |
| | | | | 37 | 9 6 464 | | | | 1365 |
| | | | | 933 | 7 9 3 | | | 1365 | |
| | | | | | 370 5 64 | | 1½ | 4 1119 | 194 |
| | | | | 2034 | 31 | | | 37 | 5 |
| | | | 1653 | 4 | | | | 1 | |

| Bases | Deoxidizers | P. Electrode | N. Electrode | At intervals of minute: Coarse Coil | | | | Fine Coil | | | | After 5 minutes: Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hydrogen Potassic Sulphate | Dioxide of Manganese | | | 80 | 5.681 | | | 1.805 | | | | 5.681 | |
| " " | " | | | 61 | 1.805 | | | 12 | | | | 34 | |
| | | | | | | | | 3.601 | | | | | |
| " " | Chlorate Potash | | | | | | | 5.45 | | | | 32.724 | |
| | | | | | | | | 5.769 | | | | 17.043 | |
| " " | " | | | | | | | 46 | | | | | |
| " " | " | | | | | | | 46.208 | | | | 19.154 | |
| " " | " | | | | | | | 4.043 | | | | 46.577 | |
| " " | " | | | | | | | 4.505 | | | | 24.971 | |
| " " | " | | | | | | | 2.197 | | | | | |
| " " | " | | | | | | | 16.697 | | | | | |
| " " | Nitre | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | Chromic Acid | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | Bichromate of Potash | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | " | | | | | | | | | | | | |
| " " | Bichloride Tin | | | | | | | | | | | | |

34

1431
2
2862
4 pints
4 34.5

| Bases | Oxidizers | P. Electrode | N. Electrode |
|---|---|---|---|
| Hydrogen Potassic Sulphate | Bichloride Iron | | |
| " | " | | 633 |
| " | " | | 75 |
| " | " | | 356 |
| " | Peroxide Iron | 2.41 | |
| " | " | 2.496 | |
| " | " | 1405 | |
| " | " | 791 | |
| " | " | 127 | |
| " | " | | |
| " | " | | |
| " | Permanganate of Potash | | 54 |
| " | " | 1328 | |
| " | " | 33 | |
| " | " | 3456 | |
| " | " | 3484 | |
| " | " | 4244 | |
| " | Carbolic Acid | 33 | |
| " | " | 2974 | |
| " | " | 3314 | |
| " | " | 1905 | |
| " | " | 1409 | |
| " | " | | |
| " | " | | |
| " | " | | |
| " | Sulphuret of Potassium | | |
| " | " | | |
| " | " | | |
| " | " | | |
| " | " | | |
| " | " | | |

At Intervals of minute

| Coarse Coil | | | | | | Fine Coil | | | | | | After 5 Cruikshanks | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Coarse | Fine |
| | 75 | 32 | 50 | 55 | 45 | 57 | 2 53. | 1236 | | | | 309 | |
| | | | | | | | | 32 | | | | 34 | |
| | | | | | | | | 2472 | | | | 2324 | |
| | | | | | | | | 3708 | | | | 9243 | |
| | | 1328 | | | | | | 2955 | | | | 10 4754 | |
| | | 32 | | | | | | 71 | | | | 5 2377 | |
| | | 2656 | | | | | | 3464 | | | | 15 7131 | |
| | | 3984 | | | | | | 7168 | | | | | |
| | | 4244 | | | | | | 3055 | | | | | |
| | | 78 | | | | | | 1056 | | | | | |
| | 33 | 9968 | | | | | | 157 | | | | 1/2 | 324 |
| | 29 | 7472 | | | | | | | | | | | |
| | 33 | 1468 | | | | 10 | 151 | 73 | | | | | |
| | 19 | 05 | | | | 1.192 | | 1328 | | | | 3736 | |
| | 14 | 09 | | | | 82 | | | | | | 34 | |
| | 127 | | | | | 2354 | | | | | | 19944 | |
| | | | | | | 576 | | | | | | 11208 | |
| | 1/4 | | | | | 3814 | | | | | | 12 0244 | |
| | 1429 | | | | | 78 | | | | | | 6.35 1 5 | |
| | | 32 | | | 24 | 5656 | | | | | | 19 6 36 | |
| | | 2854 | | | 26 | 1005 | | | | | | | |
| | 42 | 87 | | | | 2975 | 2 | | | | | | |
| | | | | | | 1905 | | | | 10 | | 127 | |
| | 457 | 28 | | | | 1070 | | | | | | 127 | |
| | | 70 | | | | 127 | | 1/3 | | | | (635 | |
| | 26 | 5254 | | | | | | 1/2 | 9 8 | | | 17 | |
| | 32009 | 6 | | | | | | | 6 6 | | | 889 | |
| | 356 | | | | | | | | | | | 32 | |
| | 1905 | | | | | | | | | | | 35 | 127 |
| | 1460 | | | | | | | | | | | 4 | 2159 |
| | (12) | | | | | | | | | | | | 36. |

| Bases | Oxidizers | P. Electrode | N. Electrode |
|---|---|---|---|
| Hydrogen Potassic Sulphate | Red Lead | 1192 | |
| | | 933 | |
| | | 259 | |
| | | 257 | |
| | | 2.1144 | |
| | | 75 | |
| | | 1.1.3 | |
| Ammonium-Hypophosphate | Peroxide lead | 1005 | |
| | | 2451 | |
| | | 1261 | |
| | | 2526 | |
| | | 421 | |
| | | 2941 | |
| | Peroxide of Manganese | 933 | |
| | | 1066 | |
| | | 2999 | |
| | | 2956 | |
| | | 75 | |
| | | 2388 | |
| | | 2.1999 | |
| | | 2.2576 | |
| | | 63 | |
| | Chlorate Potash | 1065 | |
| | | 5421 | |
| | | Nil. 8121 | |
| | | 2 | |
| | | 92621 | |
| | | 263. | |
| | Nitre | | |

Abstracts of minutes -

| | | Coarse Coil | | Fine Coil | | | Effect S. Circuit 2m. Coarse | Fine |
|---|---|---|---|---|---|---|---|---|
| 35 | 39 (40) | 50 | 43 | 54 | 45 | 55 | 2.4277 | |
| 75 | 49 | 1192 | 933 | 1.377 | 1. | 1.429 | 34 | |
| | | | | | 137 | | 9908 | |
| | | | | | 2.2544 | | 7 4.31 | |
| | | 0032 | | | 4.1391 | | 1 4.218 | |
| | | 75 | | | 4.4064 | | 4 2.109 | |
| | | 256 | | | 75 | | 1 6.327 | |
| | | 2244 | | | 1.2.573 | | | |
| | | 2496 | | | 4.448 | | | |
| | | 126 3 | | 5 | | | 33 68 | |
| | | 3.3. | | 3 | 4.3 6 9 9 2 | 3/m | 23 68 | 4.21 |
| | | 1/2 | | 1 | 2 6 3 | | | 378 |
| | | 2.26 | | 2 | 1 7 3 | | 1434 | |
| | | | | | | | 75 | |
| | | 8 | | | | | 2.5.5 | |
| | | 782 | | | | | 4.2.7 | |
| | | 75 | | | | | 4.5.7 | 2.8 |
| | | 1566 | | | | | | 75 |
| | | 2346 | | | | | 6.5.8 | 2.4 |
| | | 75 | | | | | 6.0.9 | |
| | | 2.50 | | | | 3 | 3.5.6.7 | 5.7 |
| | | | | | | | 26 | |
| | | 2010 | | | | | 240. | |
| | | 1965 | | | | | 939 | |
| | | 1.87 | | | | | 75 | |
| | | 1.9.3 | | | | | 1.6.7 | |
| | | 1.2.6 | | | | | 2.5.8.4.5 | |
| | | 1.6.8.7 | | | | | 2.9.7.6 | 2 |
| | | 3/m | | | | | 1.9.9.4.1 | 1 |
| | | 1/2 | | | | | 2.0.4.1 | |
| | | | | | | | 1.2.6.3 | |
| | | | | | | | 1.3.1 | |

| Bases | Oxidizers | P Electrode | N Electrode | At Intervals of minute: Coarse Coil | | | | Fine Coil | | | | Flow S Circuit 2 m: Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ammonium | Nitric | | | | | | | | | | | | |
| Hydrophosphate. | Chromic Acid | | | 67 | 2.358 | | | 466 | | | | 2.358 | |
| " | " | | | | | | | 33 | | | | 4432 | |
| " | " | | | 44 | 119 | 60 | | 1933 | | | | 6714 | |
| " | " | | | 466 | 1157 | 1733 | | 2868 | | | | 10172 | |
| " | " | | | | | | | 3033 | | | | 4002 | |
| " | " | | | | | | | 5 | | | | 1203.8 | |
| " | " | | | | | | | 2473 | 96 | | | | |
| " | " | | | | | | | 3163 | 4 | | | 1157 | |
| " | " | Bichromate of Potash | | | | | | 2711 | 36 | 1/2 | | 2302 | |
| " | " | | | | | | | 1200 | | | | 4602 | |
| " | " | | | | | | | 1311 | | | | 6832 | |
| " | " | | | | | | | | 1733 | | 56 | 75 | |
| " | " | | | | | | | | 33 | | | 4656 | |
| " | " | | | | | | | | 4466 | | | 29 | |
| " | " | | | | | | | | 57 | 84 | | 2519 | 24 |
| " | " | Bichloride Iron | | | | | | | 13 | 4856 | | 119 | 2896 |
| " | " | | | | | | | | | 75 | | 126 | |
| " | " | | | | | | | | 4336 | 4848 | | 169 | |
| " | " | | | | | | | | 4 | 1922 | | 2 | |
| " | " | | | | | | | | 4325 | 5648 | | | |
| " | " | | | | | | | | 1203 | | | 114 | |
| " | " | | | | | | | | 3123 | 4 | | | |
| " | " | Peroxide Iron | | | | | | | | | | | |
| " | " | | | | | | | | | | | | |
| " | " | | | | | | | | | | | | |
| " | " | | | | | | | | | | | | |
| " | " | Permanganate of Potash | | | | | | | | | | | |
| " | " | | | | | | | | | | | | |

| Bases | Acidizers | P Electrode | N Electrode |
|---|---|---|---|
| Ammonium Hydrophosphate | Permanganate Potash | | |
| | Carbolic Acid | | |
| | Sulphuric Acid of Potassium | | |
| | Red Lead | | |
| Nitrate Ammonia | Peroxide Lead | | |
| | Peroxide of Manganese | | |

Intervals of minute

| Coarse Coil | Fine Coil | After Commutation Coarse | Fine |
|---|---|---|---|
| | | | |

| Bases | Oxidizers | P Electrode | N Electrode |
|---|---|---|---|
| Nitrate Ammonia | Peroxide of Manganese | | |
| " " | " | | |
| " " | " | | |
| " " | Chlorate Potash | | |
| " " | " | | |
| " " | " | | 1 29 |
| " " | " | | 32 |
| " " | " | | 2.562 |
| " " | " | | 3848 |
| " " | " | | 10992 |
| " " | Nitre | | 20 |
| " " | " | | 34 7638 |
| " " | " | | 21 6444 |
| " " | " | | 31 67376 |
| " " | " | | 10 4 |
| " " | " | | 2.10 3. |
| " " | " | | 7296 |
| " " | Chromic Acid | | 4 |
| " " | " | | 16 6676 |
| " " | " | | 328. |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Bichromate of Potash | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Bichloride Tin | | |

At Intervals of minute.

| Coarse Oil | | | | Fine Oil | | | | After 5 Consumption Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|
| 33 | 48 | 26, 52 | | 2052 | | 1328 | | 2146 | 737 |
| 65 | 1111 | | | 34 | | 32 | | 34 | 22 |
| | | | | 8208 | | 2656 | | 5544 | 14 54 |
| | | | | 156 | | 39 84 | | 35 1 | 32 64 |
| | 2222 | | | 9764 | | 4 2496 | | 2964 | 32 |
| | 3333 | | | 4 1 1 1 | | 24 | | 32 | 18 6112 |
| | 35 5552 | | | 4 6 5 5 | 33 | 9964 | | 1 6228 | 4 5 |
| | 26 | | | | 24 | 4972 | 109 | 44 | 181 4592 |
| | 2844 | | | | 3 3 7 4 | 6 1 5 5 | | | 109 4 |
| | 24 1 1 4 4 | | 476 | | 101 | | | | 0 9 2 6 |
| | 27 7 3 0 5 5 | | 4 | | 227 | | | | |
| | 104 4 4 | | 49 7 8 4 | | 209 1 | | | | 7296 |
| | 167 5 6 | | 314. | | | | | | 4 |
| | 144 | | | | | | | | 36 4 8 20 |
| | 18 | | 2 4 | | 7296 | | | | 15 |
| | 160 | | | | 2 8 8 8 | 7296 | | | 65 |
| | 1036 | | | | 6 | | | | 32 |
| | 32 | | 4 | 1 0 4 4 4 | 3 4 4 8 | | | | 130 |
| | 3 1 0 8 | | | 2 7 5 | 12 | | | | 115 |
| | 3 1 0 8 | | | | | | | | 208 |
| | | 2472 | | | | | | | 98 |
| | | 3 1 0 8 | | | | | | | 16 64 |
| | | 33 1 2 2 | | | 7296 | | | | 14 5 |
| | | 98 | | | 4 | | | | 162 4 |
| | | 2652 16 | | | 16 6676 | | | | 109 4 |
| | | 23 2064 | | | 166 | | | | 52 |
| | | 2 8 8 5 5 5 16 | | | | | | | |
| | | 109 44 | | | 7296 | | | | |
| | | | | | 4 | | | | |
| | 149 114 | 2 | | 5 7 0 7 4 8 | | | | | |
| | | | | 255 | | | | | |

At intervals of minutes

| Bases | Oxidizers | P. Electrode | N. Electrode | Coarse Coil | | | Fine Coil | | | | After Stoppage | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrate Ammonia | Bichloride Iron | | | | | | | | | | Coarse | Fine |
| " " | " | | | | 63 | 701 | 2 | 1328 | | 1336 | 62.32 | 4.55 |
| " " | " | | | | 35 | 754 | | | | | 1.895 | 1.429 |
| " " | " | | | | | 37 | | 53 | 26. | 57 | 34 | 33 |
| " " | " | | | | 1.964 | | | | | | 7.326 | |
| " " | " | | | | 34 | .498 | | | | | 1.615 | 2.58 |
| " " | " | | | | 32 | 32 | | | | | .07390 | 4.67 |
| " " | Bioxide Iron | | 17 | | 7.066 | 2.76 | | | 61336 | | .09205 | 47.26 |
| " " | " | | 1.600 | | 27 | | | | 32 | | | 36.5524 |
| " " | " | | 1.677 | | 5.896 | 1.46.6 | | | 60.8752 | | 6.2 | 1.320096 |
| " " | " | | 100 | | | 26 | | | 32 | | 3.2566 | 7.72 |
| " " | " | | 6716 | | 5.896 | 2.2.9.25 | | | 7.5.7.6 | | 3.2095 | |
| " " | " | | 669 | | 10.9.7.2 | | | | 6.6.4.8 | | 12.1.0.2.6.6 | |
| " " | " | | 1 | | 13.1.1.0.4.8 | | | | 6.4.0.7.7 | | 1.1.1.0.6 | |
| " " | " | | | | 100.16 | | | | 3.1.4.4.1 | | .0004 | |
| " " | " | | 2 | | 2.7 | 8 | | | .0.7.3.3 | | | |
| " " | " | | 6677 | | 66 | | 6667 | | | | 2 | |
| " " | " | | 3.3.7.5 | | | | | | | | 7 | |
| " " | Bioxide Iron | | | | 1.6667 | | 0.6.7 | | 1.1.6 | | 16 | |
| " " | " | | | | .111 | | | | | | 14 | 0.6.6.0 |
| " " | Permanganate Potash | 4 Ohm | 67. | | | 7.3.3.9 | | | 2.2.2.1 | | 15 | 32.0.6 |
| " " | " | | | | | 12.2 | | | 2.0.0.5 | | .09 | 1.16 |
| " " | " | | | | | | | | 2.0.0.5 | | 0 | |
| " " | " | | 1.336 | | | | | | 2.0.4.4.1 | | 0 | |
| " " | " | | 32 | | | | | | 2.0.0.5.6.4 | | | |
| " " | " | | 2.4.7.0 | | | | | | 2.0.0.5 | | | |
| " " | " | | 3.7.0 | | 6.6.7 | | | | 1.7.3.0.7 | | | |
| " " | Carbolic Acid | | | | 6.0.7.3 | | | | 1.6.6.1 | | | |
| " " | " | | 3.9.5.7.8 | | .3.- | | | | .7.7.4.6 | | | |
| " " | " | | | | | | | | .6.6 | | | |
| " " | " | | 3.4.6.4.1.6 | | 1.3.2.8 | | | | 0.6.6.7.7 | 0.6.6.7.7 | | 7.3.2 |
| " " | " | | 3.7.6.5.6.4 | | 32 | | | | 0.6.6.7.7 | 3.4.7.7 | | 32 |
| " " | " | | 3.0.5.0.6.6 | | 2.6.6 | | | | 4.9 | 185 | | 1.5.0.5 |
| " " | " | | 100 | | 3.9.4.4 | | | | | | | 26.2 |
| " " | " | | 20 | | 4.8.4.1.6.7 | | | | | | | 4.1.2.5 |
| " " | " | | | | | | | | | | | 7.5 |
| " " | " | | | | | | 0.6.6.7.3 | | | | 19 | 3.0.2.4 |
| " " | Sulphuret of Potassium | | 3 | | 3.0.9.7.2 | | | | | | 1.6.1.5.9.6 | |
| " " | " | | | | 2.9.9.1.6.8.8 | | 6.0.9.3 | | 1.7.4 | | 0.8.1.9.5.4 | |
| " " | " | | | | 1.0.8.1.4 | | | | | | 6.6.7 | |
| " " | " | | | | 1.0.0.7 | | | 1.4.7.5 | | | 1.6 | |
| " " | " | | | | 2.0.7 | 3.4 | | 3.3.2.8.6 | | | | |

| Bases | Oxidizers | P Electrode | N Electrode |
|---|---|---|---|
| Nitrate Ammonia | Red Lead | 1.192 | |
| " " | " | 32 | |
| " " | " | 2.3814 | |
| " " | " | 3576 | |
| " " | " | 3.81444 | |
| " " | " | 19073 | |
| " " | " | .0572.16 | 3.5144 |
| " " | " | 75 | 75 |
| Water Glass. | Peroxide Lead | 4.5772 | 3.4152 |
| " " | " | 40081.2 | 2.6005 |
| " " | " | 44.4284 | 2.9642.32 |
| " " | " | 12 | 12525 |
| " " | " | | 17127 |
| " " | " | 0.835 | |
| " " | " | 2 | |
| " " | Peroxide of Manganese | 1.8745 | |
| " " | " | 296 | |
| " " | " | 1.882 | .933 |
| " " | " | 32 | 32 |
| " " | " | 7.5525 | 1.866 |
| " " | " | 5.646 | .1799 |
| " " | " | 6.3955 | 2.9556 |
| " " | Chlorate Potash | 3.994 | 75 |
| " " | " | .09595 | 2.35848 |
| " " | " | | 2.8992 |
| " " | " | .0639 | 2.32575 |
| " " | " | 2 | .09595 |
| " " | " | .44976 | 1.3650 |
| " " | " | 7.24. | |
| " " | Nitre | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | " | | |

All Intervals of minutes

| Coarse Coil | Fine Coil | After 5 Coincidences Coarse | After 5 Coincidences Fine |
|---|---|---|---|
| 1.429 | .701 | 1.964 | 1.601 |
| 34 | 32 | 34 | 32 |
| 5.716 | 1.402 | 7.856 | 3.202 |
| 42.87 | 2.103 | 8.992 | 4.803 |
| 48.586 | 2.432 | .06676 | 1.2052 |
| 2.493 | 75 | .93365 | 75 |
| .07.2579 | .2.994.56 | .10016 | 4.09716 |
| | 1.5702.4 | .0.4835 | 3.57264 |
| | 1.7496.96 | 2 | 3.99756 |
| | 07.87 | 3.4006 | 100 |
| | 102.08 | 17. | 2.990 |
| | | | 0.667 |
| | | | 0.669 |
| 2.75 | .010.32 | | 4.0062 |
| 64 | 75 | | |
| 1.00 | 3.46 | 0.835 | |
| 72.5 | 2.3.4 | 3 | |
| 0.03.350 | .2.5.96 | 2.505 | |
| 12.2 | 12.2 | | |
| 4.175 | 13.79 | | |
| .12.525 | | | 0.6398 |
| 1.882 | .701 | | 0.6398 |
| 24 | 32 | | 0.6398 |
| 7.525 | 1.402 | | 4.6378 |
| 5.646 | 2.103 | | |
| 0.63955 | 2.432 | | 0.639 |
| 2.994 | 75 | | 0.639 |
| .09.5952 | 1.794.56 | | 7.029 |
| | 1.7702.4 | | 176 |
| | 1.7496.96 | | |
| | 09.87 | | |
| | 7.90. | | |
| | 6.3 | | |
| | 15. | | |
| | 75 | | |

| Bases | Oxidizers | P Electrode | N Electrode |
|---|---|---|---|
| Water Glass | Nitric | | |
| " | Chromic Acid | | |
| " | " | 56 | 46 |
| " | " | 1.483 | 0032 |
| " | " | 0594 | 78 |
| " | " | 5932 | 24 |
| " | " | 4449 | 234 |
| " | Bichromate of Potash | 050422 | .2498 |
| " | " | 02521 1 | 0756 |
| " | " | 07563 3 | .7330 |
| " | " | | 3/12 |
| " | " | | 150 |
| " | " | | 35 |
| " | " | | 0504 |
| " | " | | 5541 10 |
| " | Bichloride Tin | | |
| " | " | 52 | 35 |
| " | " | 1.251 | .741 |
| " | " | 34 | 32 |
| " | " | 5524 | 1432 |
| " | " | 3843 | 2023 |
| " | " | 4355 4 | 2232 |
| " | Bioxide Iron | 2177 | 78 |
| " | " | 1797 | 1797 |
| " | " | 0532 | 1596 24 |
| " | " | | .1749 796 |
| " | " | | 0653 2 |
| " | " | | 10964 |
| " | " | 2/12 | 4355 |
| " | Permanganate of Potash | | 4 |
| " | " | | 7420 |

At Intervals of minutes -

| Coarse Coil | | | Fine Coil | | | After 5 Circuit 2m Coarse | Fine |
|---|---|---|---|---|---|---|---|
| 70 | 2.75 | | | | | | |
| 56 | 1.483 | | | 2.75 | | 1483 | |
| | | | | 037 | | 37 | |
| | | | | 1925 | | | |
| | | | | 125 | | 1031 | |
| | | | | 1075 | | 4449 | |
| | | | | 50 | | | |
| | | | | 87 | | 00 | 4871 |
| | | | | 1526 | | | 78 |
| | | | | | | 4359 | 65 |
| | | | 10475 | | | 3840 | 97 |
| | | | 00548 | | | | |
| | | | 0 | 3 ohm | | 4279 | 938 |
| | | | 0427 | | | 1526 | |
| | 10775 | | | | | | |
| | 9 | | | | | 2753 | |
| | 91875 | | | | | 096 | |
| | | 14578 | | 2.607 | | | 1964 |
| | | | | 037 | | | 37 |
| | | | | 1829 | | | |
| 69 | 2.607 | | | 78 | | 1354 | 8 |
| 63 | 1.964 | 5 ohm | | 0964 | | 589 | 2 |
| 65 | 2.146 | | | 59 | | | |
| 61 | 1.805 | | | 1446 | | 00744 | 68 |
| | | | | 8 | | | 78 |
| | | | | 096459 | | | |
| | | | | | 1.59 | 5744 | |
| | | | 096459 | | | | |
| | | | 00744 | | 1061049 | 2 | 276 |
| | | 074402 | | | | | |
| | | 7 | | 0890 | 2 | 8050 | 8 |
| | | | | | | 85 | 04 |
| | | | | | | 0 | 685 |
| | | | | | | 0 | 648 |
| | | | | | | 4 | 4 |
| | | | | 2.146 | | 6270 | 2 |
| | | | | 33 | | 63 | 162 |
| | | | | 1.805 | | | |
| | | | | 38 | | 1.89 | 1805 |
| | | | | | | | 37 |
| | | | 074402 | | | | 2639 |
| | | | 00744 | | | | 5415 |
| | | | 0794 | | | 00 | 6785 |
| | | | 3910 | 3727 | 24 | | 78 |
| | | | 1910 | | | | |
| | | | 4006 | | | 53 | 2250 |
| | | | 072 | | | 467 | 495 |
| | | | | | | 5 | 250 |

| Bases | Oxidizers | P. Electrode | N. Electrode |
|---|---|---|---|
| Water Glass | Bimanganate of Potash | | |
| " " | Carbolic Acid | 1.338 | .488 |
| " " | " | .5312 | .9795 |
| " " | " | .39844 | .14644 |
| " " | " | .045252 | .156616 |
| " " | " | .22626 | .06888 |
| " " | " | .067888 | .057258 |
| " " | " | | |
| " " | Sulphuret of Potassium | .045255 | |
| " " | " | .31675 | |
| " " | " | .158 | |
| " " | " | 2.477 | .839 |
| " " | " | .03 4 | .36 |
| " " | " | .9908 | .7677 |
| " " | " | .7931 | .6548 |
| " " | " | .7918 | .7622 |
| " " | Red lead | .05 4 2 1 9 | 1.4 2 1 6 |
| " " | " | 4 2 1 0 9 | |
| " " | " | .13 6 3 2 7 | .34 |
| " " | " | .2105 | .16 |
| " " | " | 0.8842 18 | |
| " " | " | 1 (.35 2 6 5 4 / .84 6 1 8) | |
| Caustic Soda. | Peroxide lead | 1 (.5 / .8 4 6 1 8) | |
| " " | " | .1094 8 3 3 / .274 | |
| " " | " | | |
| " " | " | | |
| " " | " | | |
| " " | Peroxide of Manganese | | |

Abstract of minute

| Coarse Coil | | | Fine Coil | | | After Short Circuit 2m. | |
|---|---|---|---|---|---|---|---|
| | | | | | | Coarse | Fine |
| 59 | 1.665 | 1665 | | 578 | 0.5604 | | |
| 30 | .578 | .34 | | .32 | .15 | | |
| 35 | .78 | 660 | | .156 | .2830 | | |
| 35 | .709 | 4 4 9 5 | | .1734 | .141 | | |
| | | 0.5 6 6 1 | | .18 4 9 5 | | | |
| | | .2530 | | .38 | | | |
| | | 0.5 4 9 1 | | .14 7 7 6 5 | .711 | | |
| | | | | .32 | | | |
| | | .78 | | .13 4 9 7 2 | .1402 | | |
| | | .32 | | .14 4 2 6 5 5 | .2103 | | |
| | | .15 6 4 | | 0.5 4 1 9 | .2 2 4 3 3 | | |
| | | .3 4 6 | | | .76 | | |
| | | .2 5 0 2 7 4 | | 0.5 7 3 | .1794 5 6 | | |
| | | .7 5 | | | .15 7 0 2 4 | | |
| | | .2 | | 0.5661 | .17 4 9 7 9 5 | | |
| | | .20 0 1 9 | | .3 | .0 8 4 9 | | |
| | | .17 5 1 6 | | .16 9 8 3 | .0900 7 | | |
| | | .19 5 1 8 | | | | | |
| | | 0.0 4 9 1 | | | | 1.601 | |
| | | .7 0 2 7 | | | | .34 | |
| | | | | 0.5664 | | 6 4 0 4 | |
| | | | | .9 | | .8 0 3 | |
| | | | | .1 5 7 9 | | 0.5 4 0 2 7 4 | |
| | | | | .195 | .625 | .32 2 7 7 | |
| | | | | | .32 | 0.1 6 5 | |
| 58 | 1.601 | | | | .1250 | 16 8 3 | |
| 32 | .625 | | | | .1 7 5 | | |
| | | | | | .2 0 0 9 | | |
| | | | | | .78 | | |
| | | | | 16.0 | | | |
| | | | | 160 | | | |
| | | | | .1560 0 0 | 1½ | | |
| | | | | .0916 | | | |
| | | | | 0.7 4 4 | | | |

| Bases | Acidiferous | P Electrode | N Electrode |
|---|---|---|---|
| Caustic Soda | Precipitated Manganese | | |
| " | " | | |
| " | Chlorate Potash | | |
| " | " | | |
| " | " | | |
| " | " | | |
| " | " | | |
| " | Nitre | | |
| " | " | | |
| " | " | | |
| " | " | | |
| " | Chromic Acid | | |
| " | " | | |
| " | " | | |
| " | " | | |
| " | Bichromate of Potash | | |
| " | " | | |
| " | " | | |
| " | " | | |
| " | Bichloride Tin | | |

A Intervals of minute

| Coarse Coil | | | | Fine Coil | | | | After S Circuit 2m. Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|
| 50 | 1.192 | 53 | 1.328 | | | | | | |
| 46 | 1.036 | 50 | 1.192 | | | | | | |
| | | | | | | | 1036 | | |
| | | | | | | | .0037 | | |
| | | | | | | 1192 | 7252 | | |
| | | | | | | 37 | 3108 | | |
| | | | | | 53 | 24 | | | |
| | 1.192 × 037 = 0.044104 | | | | 3576 | 0.03833 2 | | | |
| | 1.036 × 0037 = 0.03833 2 | | | | 44104 | 7 8 | | | |
| | | | | | 22052 | 3665 6 | | | |
| | | | | | 66156 | 261324 | | | |
| | | | | | | 29198 96 | | | |
| | 044104 | | | | | 066 156 | | | |
| | | 13 | | | | 2 3 0 5 3 3 6 | | = John. | |
| 2 | 5636 | 52 | | | | 044104 | | | |
| | 3816 | 76 | | | | | | | |
| | | | 1.328 | | | | 1192 | | |
| | | | 37 | | | | 37 | | |
| | | 9296 | | | | 5544 | | | |
| | 3984 | | | | 3576 | | | | |
| 049 | 13 | 6 | | | 00441 | 104 | | | |
| | 24 | 568 | | | | 78 | | | |
| | | | | 3 5 2 5 | 32 | | | | |
| 73 | 704 | | | 3 0 5 7 | 28 | | | | |
| | | | | 3 4 4 0 1 | 13 | | | | |
| | | | | 0 7 3 7 | 04 | | | | |
| | | | | 2 7 0 3 0 7 | 2 | = | | 5½ | |
| 049 | 13 | 6 | | | | | | | |
| | | 7 | | 049 | 13 | 6 | | | |
| 3m | 3 9 5 | 2 | | | | | | | |

| Bases | | Oxidizers | P Electrode | N Electrode | At Intervals of minute: Coarse Coil | | | | Fine Coil | | | | After Saturation: Coarse | Fine |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Caustic Soda | | Bichloride Tin | | | | | | | | | | | | |
| " | " | " | | | | 1.325 | | 4711 | | | 1601 | | 4337 | |
| " | " | " | | | | 32 | | 24 | | | 32 | | 24 | |
| " | " | " | | | | 26 | | 18844 | | | 3202 | | 17345 | |
| " | " | Bioxide Iron | | | | 3984 | 14235 | | | | 4803 | | 16011 | |
| " | " | | | | | 42496 | 160174 | | | | 6723 | | 17345 | |
| " | " | " | | | | 48 | 14087 | | | | 27 | | 37209 | |
| " | " | " | | | 33 | 9968 | 24026 | | | | 40456 | | 21187 | |
| " | " | " | | | 19 | 7472 | | | | | 35524 | | | |
| " | " | " | | | 33 | 14658 | | | | | 39660 | | 1/4 | |
| " | " | " | | | 24 | 6026 | | 32 | | | 23159 | | | |
| " | " | " | | | 9 | 120 | | | | | 17422 | | 14764 | |
| " | " | Permanganate of Potash | | | 16 | 07. | | | | | 1474. | | 14745 | |
| " | " | | | | | | | | | | | | 4 6219 | |
| " | " | " | | | | | 1.805 | | | | | | 405 | |
| " | " | " | | | | | 72 | | | | | | | |
| " | " | " | | | | | 5415 | | | | 782 | | 1882 | |
| " | " | " | | | | | 61370 | | | | 22 | | 24 | |
| " | " | Carbolic Acid | | | | | 36 | | | | 5624 | | 5225 | |
| " | " | " | | | | | 9205 | | | | 2346 | | 5646 | |
| " | " | " | | | | | | | | | 2502 | | 6 9958 | |
| " | " | " | | | | | 675 | | | | 71 | | 3 1994 | |
| " | " | " | | | | | 13 | | | | 20019 | | 9 5952 | |
| " | " | " | | | | | 1350 | | | | 17568 | | | |
| " | " | " | | | | | 3025 | | | | 19587 | | 19 94 | |
| " | " | " | | | | | 214 | | | | 958 | | | |
| " | " | Sulphuret of Potassium | | | | | 71 | | | | 9920 | | | |
| " | " | " | | | | | 1710 | | | | 13. | | | |
| " | " | " | | | | | 1498 | | | | | | | |
| " | " | " | | | | | 1169 | | | | | 4437 | | |
| " | " | " | | | | | 920 | | | | | 6437 | | |
| " | " | " | | | | | 749 | | | | | 1950 | | |
| " | " | " | | | | | 45. | 1/4 | | | | 4 194 | | |

| Basis | Oxidizers | P Electrode | N Electrode |
|---|---|---|---|
| Caustic Soda | Red Lead | | |
| " " | " " | | |
| " " | " " | | |
| " " | " " | | |
| " " | " " | | |
| " " | " " | | |

60 1.733 × 037
46

1733
037
12131
5199
0641 21
32 06
0961 81

0641 21
00 3833
0602 88

2989896
0961 81
2028 08

0602 88

2 3½ × 1½ × 0641 21 = 32 06 05

364
037
25448
1092
0134 68
0673 44
0202 02

20 364 × 037 = 0134 68
10 177 × 037

177
037
1239
531
0065 49
79
5239 2
4584 3
051082 2
026 20 6
0312 801 = 2p
0173

0134
0006

At intervals of minutes

| Coarse Coil | | | Fine Coil | | | After S Circuit 2m. Coarse | Fine |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

55 1.429
46 1.036

1.429
037
10003
4287
052873
26436
0793 10

1036
037
7252
3108
0038332
3066 76
2683 24
2989896
0793 1
3196796
052873

0538
0332
496

2 4 ohm.

052873
11
581603
2958

29

45.1 · 2037
41.9

037
0032
030

037/3
481
1405

6 ohm

6g 2.607
55 1.429.

50 1.192.
55.

0037
6687
2611
0032719
78
2558 52
2253
2510 53
65
201042
033

2607
087
18249
7821
096459
48229
144688

096459
0052
0912

1.192
037
8344
3576
044104
2305
066156

044104
0052
8388

9.

044104
14
3969 36
441104
8 3 7 9 7 6
2 1 8 9.

3 ohm

096459
8 8 1 8 1
4324
412097
144688
267410
0912.

412097.
066156
345941
0388. 9

Resistance ... Ohm

Co 56 41 Co
46 41

6 1.805.
55 1.429
a 10 58

1805
037
12635
5415
066785
33592
100177

1429
0037
10003
4283
0052833
78
42266 4
369831
412097 4

066785
0052
0615

312097 4 = 5 ohm
0615

066785
13
1 066105
37 7534
33 65

037890
13
36 2674
6 ohm .8133

264
037
3277
2266
027896
1394
04188
01 2 40
01 65 35
18759
0418
14579
0254

02789
0034
254

30 1.192 ×037
25 .467

1.192
37
8344
3576
044104
220 57
.066156

467
78
3269
1401
0077279
1352232
1209553
1347762
066156
0686202
042377

042377
7
.132212

66 42.348
42 901
43 933

933
637
6537
2799
083776

901
037
6307
2703
083776
6155
003337
1247124

348
037
936
1044
083776
003521
78
2403333
276168
7974
2692638
1247124
1445
797

266696
233359
2600286
1247124
1352646
797
2ohm

Coffin

| | | | | |
|---|---|---|---|---|
| Unscaled railroad Coffey + Carson | 26 | 3 / 46 | 9 / 13 | |
| Pb. railroad Shoup + Pais | 70 | 54 | 58 | 40 |
| Pb. railroad Elmore + Camp | 37 | 31 | 45 | 34 |
| Pb. railroad Stat | 0 | 0 | 0 | |
| Phosphate railroad Alvord + Carson | 32 | 23 | 32 | 20 |

78 44.711
58 1.601
75 3.736
037
261552
11208
1382232
69111
207 3345 / 30 / 5
1280149
610

4711
037
32977
14137
1743307
89153
26656
2ohm
1382232
005923
132309
1382232
7
9676624
1068m

1601
037
11207
4808
0069237
78
493896
4146559
4614486
207 324
20 060
4 ohm
2537
1323

60 1.733 × 0032

33 .65 × 0032

1733
34
6932
5199
.058922
29461
088383
088383
11 / 1972213
24305

65
0032
130
195
002080
78
1664
1456
.16224
08835
10738 6
058
1/4

00208
002081
.701
32
1402
2103
0022432
78
179456
157024
1749696
088383
.0865566

058922
058922
4/648142
162

05892
3
176766

.675
32
1350
2025
002160
78
1728
1512
168480
08835
8000
1/4

1.805
034
7220
5415
061370
3065
.09205

1766

.16224
09205
07019
1/4

06137
06137
4/67507
169

.1749696
060792
.1141776
0405

50. 1.192

31 .445

35 .701

1.192
34
4768
3576
.040528
2026 4
.060792

.445
0032
890
1335
0014240
78
11392
9968
.111072
060742

058.92
19
53028
5892
111948
1/4 / 27987
1/2

040528
040528
44580

111. .601
32
1202
1803
.19232
78
153856
134624
.150009 6
0883
0617
058

040528
9
4/364752
1024

05892
5
29460
147

83
1.328
32
2656
3984
42506
78
340048
297542
.3315468
08838
2221 6

2.1142
32
4228
6342
68672
78
549376
480704
.5356416
08838
4472 6

05892
05892
2/64812
324

8 ohm

| Base | Charger | Electrodes | Reading | 2 minutes. Short circuit |
|---|---|---|---|---|
| | | | a' 8 – 3 86 | a – 8 |
| Phos. [illegible] | | Iron carbon | .782 / 32 / 1564 / 2346 / 25024 / 78 / 200192 / 175168 / 1951872 / 08838 / 106.8 | .87 / 32 / 174 / 261 / 2784 / 78 / 22272 / 19488 / 217152 / 08838 / 12887 / 058 |
| [illegible] | | Copper carbon | | |
| [illegible] | | Nickel carbon | | |
| [illegible] | | Platinum carbon | 32 | 2/4 | 05892 / 15 / 6 |
| [illegible] | | Silver carbon | | 05892 / 3 / 17676 / 5 / 88380 / 4 / 22.09 |
| Phos | Permanent | carbon Iron | 05892 / 7 / 41244 / 206 | |
| Phos | Permanent | carbon Copper | | |
| Phos | Permanent | carbon Nickel | | |
| Phos | Permanent | carbon Nickel | | |
| Phos | Permanent | carbon Nickel | 25 | 7 | 26 | 28 | 41 |

Phos

Phos

Phos

Phos

Phos

.467
0032
934
1401
14944
78
119552
104608
.1165632
08838
02818
058

.488
0032
976
1464
15616
78
124928
109312
.1218048
08838
333
1/4

.532
32
1064
1596
17024
78
136192
119168
.1327872
08838
4440

.87

05892
9
4/53028
132

1 ohm. .116

March 5. 1888.

Chloride of K. 50
Caustic Ala 50

| | | a | b | |
|---|---|---|---|---|
| (1) | Sulphate | 15 | 58 | Pb – C + |
| | " " | 16 | 9 | Ag – C + |
| | " " | 10 | 17 | Ag – C + |
| | Low red. | 54 | 56 | Pb – C + |
| | " | 59 | 62 | " " |
| | " | 64 | 65 | " " |
| | " | 63 | 65 | " |
| | " | 64 | 66 | 8 ohms = .7307780 volt |
| | Red | 61 | 46 | |
| | | 53 | 33 | |
| | Nitrite | 50 | 29 | Pb – C + |
| | Sup red | 3 | 4 | Pb + C – |
| | " | 20 | 19 | Sb + C – |
| | " | 12 | 37 | Hg – C + |
| | | 9 | 14 | Cu – C + |

This mixture cracks the crucible

64 2.052 + .037 = .0769 24
66 2.248 + .0037 = .0083176

$$r = \frac{78 + .0083176 - 1.5 \times .0769 24}{.0769 24 - .0083176} = \frac{.5333868}{.0686064} = 8 \text{ ohms.}$$

$$.0769 24 \times (8 + 1\tfrac{1}{2}) = .730778 \text{ volt.}$$

(2)
March 5. 88
Sulphate Sup red 60 Pb
Phosphoric Acid 40 Pb

| a | b | |
|---|---|---|
| | | Pb + C – red |
| | | Inside Pb + C – |
| 14 | 14 | |
| 13 | 19 | Hg + C – Red. |

(3)

| a | b | |
|---|---|---|
| 5 | 7 | Pb – C + |

Nitrate Sup red 50
Nitrate Red

(4)
Phosphoric Acid 30
Sulphate Ala 70
~~Sulphate 130~~
Will yield most at any heat.
Red. 0.0.

N.B.

March 5. 1888

Alum Sulphate 30 Phosphoric acid 40 (5)

| | | |
|---|---|---|
| Al + C− | 21 | 45 |
| Cu + C− | 24 | 42 |
| Ni + C− | 16 | 48 |
| Zn + C− | 50 | 61 |
| Pt − C+ | 7 | 23 |

When first heated quite ~~red~~ Magnesia
At red heat a bluish Sp. grav. mass

Nitrate K. 60 (6)

| | a | β | |
|---|---|---|---|
| Hydrate alu 40 Sweet | 80 | 66 | Pt − C+ |

80 . 5.681 × .037 = .210197
66 . 2.248 × .0037 .0083176

$$\frac{.0083176 \times 78 - 1.5 \times .210197}{.210197 - .0083176} = \frac{3334778}{2018794} = 1\tfrac{1}{2}\text{ atm.}$$

$$.210197 \times (1\tfrac{1}{2} + 1\tfrac{1}{2}) = .630591$$

(7)

March 5 1888

Nitrate of K. 100 Cas. any Platinum −

| | α | β |
|---|---|---|
| | 5 | 40 |

Cannot fuse at a low heat burnt with some frizzy and an odor

(8)

Na. Nitrate ½ — α β
Nitrate K ½ (½ sweet) 3 10 Pt + C −

(9)

Mixture cannot fuse burning with a deflagration

| | | | |
|---|---|---|---|
| Plumbago | 25 | 10 | 10 Pt − C − |
| Dana | 25 | | |
| Nitrate K | 25 | | |

Would not liquify

March 6. 1888

1

Try same Caustic Soda

Boracic Acid 60
Sulphate of Lime 40 Nothing at
Arty Invest. no current.
tried small quantity of sulphate lime with chloride zinc as a base
some results

---

2

~~Sulphur~~
Pure Lime of Iced 75
Caustic Soda 25
Metals at red heat.

| | | | |
|---|---|---|---|
| Mg | 0 | 3 | Platinum |
| | 0 | 6 | Dirt Cu |
| | 13 | 7 | Cu – Cat + |
| | 33 | 26 | Ni + C – |
| | 70 | 56 | Ag – Ct + |

3 4 3 ohm 4 volt

---

becomes like molten lead at red heat

| | | a | B | 3 |
|---|---|---|---|---|
| Silver – | Carbon + | 9 | 9 | |
| Copper + | Carbon | 6 | 6 | |
| Nickel + | Carbon | 40 | 22 | |
| Iron + | Carbon – | 0 | 0 | |
| Platinum – | Carbon + | 18 | 8 | |

Sulphate Lead 50%
Caustic Soda 50 %

March 6 1888

4

Boracic Acid 70
Sulphate of Lime 30 very red.

| | a | B |
|---|---|---|
| | 0 | 0 C+ Pt-1 |

Would not melt

---

5

Sulphate of Lime 25
Phosphoric acid 75 a quiet mixture

| | a | 3 | |
|---|---|---|---|
| Pt – | 28 | 35 | Low. |
| Pt – | 25 | 52 | Red. |
| Cat. | 6 | 34 | Red. |
| Ni + | 34 | 48 | Red. |
| Ni + | 21 | 34 | Red. |
| Cu + | 28 | 30 | Red. |
| Pt – | 11 | 29 | White |
| Pt – | 10 | 25 | White |
| | 10 | 35 | White |

More sulphate of lime added to
matter at 33%
More sulphate of lime added to matter at 50% of lime

---

6

Sulphur 20
Plumbago 20
Phosphoric acid 60 Pt –

| a | B | |
|---|---|---|
| 5 | 6 | Low Red |
| 5 | 9 | White |

March 6. 1888

Sulphate Soda 75
Nitrate of Iron 25

| | A | B | |
|---|---|---|---|
| Red | 18 | 21 | Pt – C + |
| Bright red | 30 | 45 | |
| " " | 35 | 30 | |
| White | 24 | 25 | |

Borax 50
Sulphate 50

| | A | B | |
|---|---|---|---|
| Red | 23 | 11 | Pt – C + |
| White | 66 | 42 | Pt – C + |
| | 38 | 21 | |

Borax 50
Sulphate Soda 50

| | A | B | |
|---|---|---|---|
| | 66 | 43 | Pt – C + |
| | 36 | 25 | Red |
| | 46 | 31 | White |
| | 23 | 10 | " |

March 6 1888

Borax 50
Sulphate Soda 50
Nitrate K 50

| | A | B | |
|---|---|---|---|
| | 1 | 2 | Platinum + |
| | 5 | 8 | Carbon + |

Liquid allowed to evaporate before it could be fired.

March 7th 1888

Borax 50
Sulphate Soda 50
Nitrate K 50

| | A | B | |
|---|---|---|---|
| | 5 | 15 | Platinum – C + |
| | 10 | 11 | Ag + C – |
| | 29 | 25 | Cu + C – |
| Mixture same liquid | 63 | 55 | Sr + C – |
| a Nova Scotia sort | 3 | 3 | Ni + C – |
| | ~~40~~ | ~~15~~ | Plat – Car + |
| | 40 | 28 | White Pt – C + |
| | 5 | 3 | Ag – C + White |

| | | A | B | |
|---|---|---|---|---|
| Boracic Acid 33⅓ | red Scot | 20 | 8 | Platinum – C + |
| Chaguvina 33⅓ | " " | 16 | 15 | Cu + C + |
| Caustic Soda 33⅓ | | 5 | 8 | Cu – C + |
| | Red. | 20 | 12 | Ag – C + |
| | | 56 | 33 | Sr + C – |
| | | 5 | 6 | Ni – C + |
| | White | 4 | 3 | |

March 7 1888

| | | a | b | |
|---|---|---|---|---|
| Boracic Acid 33½ | | | | |
| Sulphate Lime 33½ | Liquid | 10 | 10 | Pt – Ct |
| Caustic Soda 33½ | Red | 35 | 15 | Pt – Ct |
| | " | 31 | 1 | Ag + C – |
| | " | 35 | 21 | Cu – Ct |
| | " | 50 | 25 | Cu – Ct |
| | " | 43 | 12 | Fe + C – |
| | " | 13 | 5 | Ni – C – |
| | White | 25 | 15 | Pt – Ct |

Body
Liquid red

Sulphate of Strontia 50 Soda 50 — a 24, b 99 — Pt – Ct +
2 ohms = + EMF. 1678616 – 50 | 30 Cu – Ct +
25 | 20 Ag – Ct +
55 | 41 Fe + C –
2 | 6 Ni + Ct +

Melted at red heat
Cooling as thick as
Castor oil

March 7 1888

| | | | | |
|---|---|---|---|---|
| Sulph. Strontia 70 | Red | 0 | 10 | Platinum – Ct + |
| Borax 80 | Red | 39 | 40 | Copper – Ct |

Sulphate Soda 50% — 55 31 Copper – Carbon +
Borax 50% — 50 38
55
35
55

Sulphate Soda 50 — a 19, b 20 — Ag – Carbon +
Borax 50 — 7 0 0 Ag 0 " 0
10 4 Ni +

Soda Sulphate 33⅓ — 8 a b
Borax 33⅓ — 8 8
Caustic Soda 33⅓ — 16.9 Copper
26 16 Plat – Ct +
25 11 Copper – Ct +
0 1 Ag – Ct +
54 35 Pb + Ct +
20 6 Ni + Ct –
15 15 Plat – Ct +
27 23 Copper –

33 25 Copper –
40 29
43 33
42 22
40 22

Tan[illegible] Table.

| No | Tan | No | Tan | No | Tan | No | Tan |
|---|---|---|---|---|---|---|---|
| 1 | .017 | 34 | .445 | 47 | 1.072 | 70 | 2.75 |
| 2 | .035 | 25 | .467 | 48 | 1.111 | 71 | 2.907 |
| 3 | .052 | 26 | .488 | 49 | 1.151 | 72 | 3.081 |
| 4 | .07 | 27 | .510 | 50 | 1.192 | 73 | 3.274 |
| 5 | .088 | 28 | .532 | 51 | 1.236 | 74 | 3.487 |
| 6 | .105 | 29 | .555 | 52 | 1.281 | 75 | 3.736 |
| 7 | .123 | 30 | .578 | 53 | 1.328 | 76 | 4.016 |
| 8 | .141 | 31 | .601 | 54 | 1.377 | 77 | 4.337 |
| 9 | .159 | 32 | .625 | 55 | 1.429 | 78 | 4.711 |
| 10 | .177 | 33 | .650 | 56 | 1.483 | 79 | 5.152 |
| 11 | .195 | 34 | .675 | 57 | 1.541 | 80 | 5.671 |
| 12 | .213 | 35 | .701 | 58 | 1.601 | 81 | 6.314 |
| 13 | .231 | 36 | .727 | 59 | 1.665 | 82 | 7.120 |
| 14 | .250 | 37 | .754 | 60 | 1.732 | 83 | 8.144 |
| 15 | .268 | 38 | .782 | 61 | 1.805 | 84 | 9.514 |
| 16 | .287 | 39 | .810 | 62 | 1.882 | 85 | 11.43 |
| 17 | .306 | 40 | .839 | 63 | 1.963 | 86 | 14.301 |
| 18 | .325 | 41 | .870 | 64 | 2.050 | 87 | 19.081 |
| 19 | .345 | 42 | .901 | 65 | 2.146 | 88 | 28.636 |
| 20 | .364 | 43 | .933 | 66 | 2.246 | 89 | 57.29 |
| 21 | .384 | 44 | .966 | 67 | 2.356 | 90 | Inf. |
| 22 | .404 | 45 | 1. | 68 | 2.475 | | |
| 23 | .425 | 46 | 1.036 | 69 | 2.605 | | |

$80°$ on $a = 5.681 \times .04 = .22724$.

$73°$ on $B = 3.274 \times .00356 = .01165544$

$$r = \frac{78 \times .01165544 - 1.5 \times .22724}{.22724 - .01165544} = \frac{.09912432 - .34086}{.22724 - .01165544} =$$

$$\frac{.56826432}{.21558456} = 2.6 \text{ ohms.}$$

$x = .22724 \times 2.6 + .34086 = .931754$

28th February 88

Constant of sine tangent galvanometer.

$\frac{0.6240}{14.5415} = 0.04$ gives unit deflection $\therefore C = 0.04 \times \tan m^\circ$

$\frac{0.6140}{88.5478} = 0.0038$ gives - - $\therefore C = 0.0038 \times \tan m^\circ$

15 . 268 × .07 = .01072

27 . 7547 × .0038 = .0028652

$$r = \frac{78 \times .0028652 - (1.5 \times .01072)}{.01072 - .0028652} = \frac{.2234856 - .01608}{.0078548} =$$

$$\frac{.2074056}{.0078548} = 27\tfrac{2}{3} \text{ ohms}$$

$$x = .01072 \times 27\tfrac{2}{3} + 1.5 \times .01072 =$$

$$x = \frac{.01072 \times 175}{6} = .3143 \text{ volts}$$

54 . 1.377 × .04 = .05508

40 . .839 × .0038 = .0031882

$$r = \frac{78 \times .0031882 - 1.5 \times .05508}{.05508 - .0031882} = \frac{.2486796 - .08262}{.0518918}$$

$$\therefore r = \frac{.1660534}{.0518918} = 3 \text{ ohms}$$

$$x = .05508 \times 3 + 1.5 \times .05508 = \frac{.02754}{\cancel{.05508}} \times 9 \quad .24786$$

$\therefore x = .24786$ volts.

a 74 3.481 × .04 = .13924
B 69 2.607 × .0038 = .00990660

~~a 76 4.016 × .04 = .16064~~
~~b 56 1.488 × .0038 = .00563584~~

$$r = \frac{.78 \times .00990660 - 1.5 \times .13924}{.13924 - .00990660} = \frac{.77[illegible] - .20886}{.12933334} =$$

$$= \frac{.56588018}{.12933334} = 4\tfrac{1}{3}\text{ohms}$$

$$x = .13924 \times 4\tfrac{1}{3} + 1.5 \times .13924 =$$

$$x = .13924 \times (4\tfrac{1}{3} + 1.5) = .13924 \times \tfrac{35}{6} = \frac{.13924 \times 35}{6} = .81223\text{ volts}$$

a 76 4.016 × .04 = .16064
b 56 1.488 × .0038 = .00563584

$$r = \frac{.78 \times .00563584 - 1.5 \times .16064}{.16064 - .00563584} = \frac{.43856112 - .24096}{.15500046} =$$

$$r = \frac{.1976012}{.15500046} = 1\tfrac{1}{3}\text{ohm}$$

$$x = .16060 \times 1\tfrac{1}{3} + 1.5 \times .16060 = \frac{.16060 \times 17}{6} = .45503\text{ volts}$$

Pt — Carbon

Sodium Sulphate 15
Boracid 2

| | | | | |
|---|---|---|---|---|
| | Ca | Cb | | |
| | | 16 | | |
| Rod | 3 | 15 | | |
| | ~~3~~ | 26 | | |
| Blood Red | 10 | 46 | Bubbles | |
| Albumen | 34 | 48 | Std Res | 8 m.f |
| Mute | 74 | 69 | 4 1/3 ohms | .81223 volts |
| | 76 | 56 | 1 1/3 ohms | .45503 volts |

When first mixed very liquid. When at 60° Rod cons. into sponge.

Ag – Carbon +

Soda Sulphate 75
Boracic acid 25

| | a | b |
|---|---|---|
| White | 30 | 25 |

| | a | b | |
|---|---|---|---|
| Mint + Carbon | 52 | 29 | Red |

Soda Sulphate 75 Boracic Acid

| | a | b |
|---|---|---|
| Red White | 20 | 16 |

Cu + Carbon + Soda Sulphate 75
Boracic acid 25

| | a | 3 |
|---|---|---|
| Drop + Carbon – Red | 40 | 23 |

Boracic Acid Soda Sulphate

40 Sulphate of Zinc
40 Sulphate of Copper } did not mix well
10 Boracic Acid

| | a | b | |
|---|---|---|---|
| Red Scarlet | 1 | 5 | Pt – Ct |
| Bright Red Scarlet | 10 | 38 | |
| " " " | 15 | 35 | |
| White | 15 | 31 | Ths Int 27 ⅓ Ebn 7 · 3143 vocb. |

| | a | b | |
|---|---|---|---|
| Sulphate of Zinc | 40 | | Ag – |
| " " Copper | 10 | | C + |
| Boracic Acid | | | |

| | a | b |
|---|---|---|
| Red Scarlet | 1 | 11 |
| Bright Red | | |
| " " | | |
| White | | |

000047

ag-C+

| | a | B |
|---|---|---|
| White | 0 | 7 |

Sulphate of Zinc } 40
Copper
Boracic Acid 10

---

| | a | B |
|---|---|---|
| White | 2 | 7 |

Ni+
C−

Copper Sulphate } 40
Zinc
Boracic Acid

---

| | a | B |
|---|---|---|
| White | 0 | 3 |

Sic−
C+

Copper Sulphate } 40
Zinc
Boric Acid 10

---

Sug. Soda 75
Phosphoric acid 25

| | a | B |
|---|---|---|
| low red | 10 | 10 |
| low red | 44 | 40 |
| Red | 55 | 46 |
| x bw R. N. White x | 54 | 40 |
| 3 ohm 8 m.f. 124/186 volt low Red | 10 | 6 |

Pt−C+

Great Chemical Co.
Mustard
Cayenne
Jamaica
Sweet

ag−C+

| | a | B |
|---|---|---|
| low Red | 40 | 46 |

Ni+C−

| | a | B |
|---|---|---|
| low R. Red | 33 | 31 |

Ni+C

| | a | B |
|---|---|---|
| low Red | 53 | 53 |

Sic+C−

Phosphorus and
Sulphide arsenic.

| Pos. | Neg. | | a | B. |
|---|---|---|---|---|
| Carbon | Flat | Dull red. | 5 | 5 |
| | | rich | 12 | 12 |

$65 = 2.146 \times .04 = .08584$

$65 = 2.146 \times .0038 = .00815548$

$t = \frac{.78 \times .00815548 - 1.5 \times .08584}{.08584 - .00815548} = \frac{.5072144}{.07768452} = 70$ ohms.

$Sm\,t = .08584 \times 7 + 1.5 \times .08584 =$

Liquid thickness of water –
bubbles – inflammable gas –

$45° = 1 \times .04 = .04$

$65 = 2.146 \times .0038 = .00815548$

$t = \frac{.78 \times .00815548 - 1.5 \times .04}{.04 + .00815548} = \frac{.5760744}{.0318452} = 19$ ohms

$Sm\,t = .04 \times 19 + 1.5 \times .04 = .04 \times \frac{19.5}{1.5} = .78$ ohm –

Wednesday 24th Feby 1888

Sulph. Acid 60 ~ 20

Boracic 40

| a | B | | a | B |
|---|---|---|---|---|
| Very red 5 | 25 | Lowest 5 | 23 | |
| 3 | 17 | Very Red 6 | 21 | |
| 3 | 17 | | 31 | |
| White 3 | 14 | White 20 | 45 | |

$t - Rt$

~~Red~~ a 3 / 3 3

Ag – Carbon +

Soda Sulphate 60 ~ 20
Boracic Acid 40 ~ 20

Boracic Acid 10
Soda Sulph. ate 90 cm

| a | B | |
|---|---|---|
| 4 | 22 | Red |
| 21 | 18 | |
| 4 | 33 | Very Red |
| 21 | 56 | White |
| 45 | 95 | White |

Rt – Ct

Boricac acid 10
Soda Sulphate 90

| | a | B | Red | Sheet |
|---|---|---|---|---|
| | 10 | 63 | | |
| | 43 | 52 | Ni + C − | |
| Inverted | 20 | 25 | Ag + C − | |
| | 90 | 59 | Ag + C − | |
| | dull 10 | 25 | Cu − Cu + | |

Mixture of Acid
Sand 25
Soda Sulphate 90
Boricacid ×

| | | | |
|---|---|---|---|
| | 0 | 66 | Red Cu − |
| | 66 | 66 | Red Sulphur |
| | 70 | 59 | Mixture Cu − |
| a | 2 | | |
| low red | 8 | 36 | Ag − C + |
| low red | 20 | 23 | Ni + C − |
| low Red | 20 | 26 | Cu − C + |
| | 11 | 33 | 43 Fe + C − |

× Int Res 3½ ohms E.M.F. .5219 volt.

70 2.607 × .04 = .10428
89 1.665 × .0038 = .0063274

$$r = \frac{78 \times .0063274 - 1.5 \times .10428}{.10428 - .0063274} = \frac{.337086}{.09795} = 3\tfrac{1}{2} \text{ ohms}$$

$$x = 10438 \times 3\tfrac{1}{2} + 1.5 \times 10438 = .10438 \times 5 = .5219 \text{ volts}$$

20 = .364 × .04 = .01456
45 = 1 × .0038 = .0038

$$r = \frac{78 \times .0038 - 1.5 \times .01456}{.01456 - .0038} = \frac{.27456}{.01076} = 27 \text{ ohms}$$

.01456 × 27 + 1½ = E.M.F. = .41496 volt.

38 .78 × .04 = .03128
26 .488 × .0038 = .0018544

$$r = \frac{78 \times .0018544 - 1.5 \times .03128}{.03128 - .0018544} = \frac{.047232}{.024256} = 3 \text{ ohms}$$

.03128 × 3 + 1½ = .14076 volt

Pt — Ct

Sand 20
Sodium Sulphate 75
Borax acid 5

Boracic Acid at Red

| | |
|---|---|
| a | 3 |
| 4 | 28 Red low |
| 14 | 45 |
| 23 | 51 Dull Red |
| 26 | 55 |
| 65 | 65 ohms .72964 |
| 60 | 68? |
| 53 | 35 |

Sulphide of Potash 21
Sulphide of Soda 7

| | |
|---|---|
| a | 3 |
| 8 | 10 |
| 7 | 27 |
| ~~28~~ 28 | 38 |
| 38 | 24 |

| | | | |
|---|---|---|---|
| Sulphide Potash 99% | | 38 | 26 |
| 2 crystals Boric Acid | | | |
| does not melt until | | | |
| White heat then gives off | | | |
| Sulphuretted Hydrogen in small quantities | | | |

65 = 2.146 × .04 = .08564
65 = 2.146 × .0088 = .0081548

$$T = \frac{.79 + .0081548 - 1.5 \times .08564}{.08564 - .0081548} = \frac{.5073144}{.0776852} = 7 \text{ ohms}$$

$$.08564 \times 7 + 1/2 = \frac{.04282}{.08564} \times \frac{17}{2} = .72964 \text{ ohms}$$

250 m a = .467 × .04 = .01868

550 m B = 1.429 × .00256 = .00508724

$$\frac{78 \times .00508724 - (1.5 \times .01868)}{.01868 - .00508724} = x = \frac{.3968574472 - .02502}{.01359276}$$

.3968574472
.02502
.3687847472 ( x
27185852
.3687847472

.01359276 ) 27 ohms

$$x = .01868 \times 27 + (1.5 \times .01868) = .01868 \times 27 + .02502 = .5472$$

76 55.
55

1/4

79 | 5.152 × .034 = .175168
58 | 1.609 × .0032

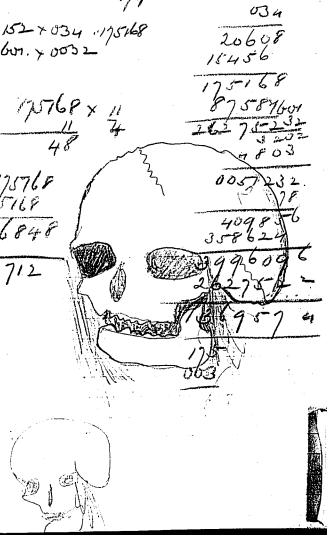
.175168 × 11/4
11
48

175168
175168
4 | .1426848
.481712

5.152
.034
20608
15456
.175168

87584604
2623 752 32
3 200 2
7803

.0057232
78
40985 6
358624
3996096
2627584
1669574
175
003



79 5-152.
84 9.541

5-152
04
.20608
18304
30912
03972
.27192

9.541
0039
85869
28623
037209 9
78
29767972
26046 93
200237 22
27192
26603 5 22 (2
20608
56955
41216
15739 2
14425 6
13136

123 14
1 1/2
12
4 14

.20608
57
14425 6
10304 0
12416 6
12 4698

47 14
.18845
31908
94220
4 107410 8
2 6

a 12
54 48
1371 1111

3.736
4
.4944
7472
22416

14944 3
54832
7472
52304

2.082
4
08328
4167
12492 68

35. 3.736
60 1.783

1783
31
55597
5199
67578
540696
473109
5277786
22416
14944 30301 86 (2
29

52775
12492
40225 86 (5

08328
49969
4167
41132

March 1. 88.

Caustic Soda 25
Lead 25
Cu Sulphate 25
Red Lead 25

Base Pt — C+

| | a | b |
|---|---|---|
| Lt red | 35 | 43 |
| Red | 60 | 50 x |
| Light red | 53 | 47 |
| " " | 58 | 36 |
| White | 8 | 11 |

Acid Silica condensa Mich.
Silica Molasses & white

#1

+ 4 ohms · 38126 volts –

#2

Phosphoric acid 20
Lactic acid 20 liq
Oxalic acid 10 x red
Acid Ammonium oxalate 20

| | a | b | |
|---|---|---|---|
| | 25 | 35 | C – P+ |
| red | 25 | 22 | C+ P+ – |
| | 24 | 30 | Red |
| | 31 | 41 | Very red |
| | 31 | 40 x | |

= 10 ohm · 27623 volts –

Great chemical action on heating treated. Very fused at low heat

000054

Pt – C +

Boracic Acid 20 — $BO_3$

Soda Sulphate 20 — $Na_2O.SO_3 + 8 H_2O$

Transition Temperature 22.5 0.50

| | a | b |
|---|---|---|
| Vapor | 4 | 11 |
| | 3 | 25 |
| White | 10 | 46 |
| | 3 | 20 |
| | 3 | 20 |

Middle of high heat

Vapor Ag could not be tested as mixture hardened at melting point of Ag

---

Soda Sulphate 20 — 33

Sulphur — 9

Boracic Acid — 33

Bichromate of Potash — 16

Oxalic Acid — 9

Would not melt at any heat

(Some Sol. in water)

#5

Pt – C +

#4 25 grams

Sulphate of Zinc 75

| | a | b | |
|---|---|---|---|
| | 43 | 51 | Stained |
| | 41 | 59 | |
| | 55 | 55 | |
| | 50 | 62 | White + |
| | 10 | 45 | |
| | 20 | 44 | |

+ 12 ohms - 64368 volt

March 2nd 1888

melted at red heat. Liquid like castor oil

Natrium Molybdate 25 gr

Strontia Sulphate 75 gr

| | a | b | |
|---|---|---|---|
| red heat | 25 | 55 | |
| very red | 70 | 63 | 4 ohms - .605 volt |
| 2nd " " | 73 | 60 | |
| White | 63 | 50 | |
| 2nd " | 55 | 46 | |
| 3rd " | 20 | 15 | |

Natrium Molybdate (pt 100) Will not melt at any
Sulphate Strontia 90% heat

Sulphate Strontia 20%
Sulphuret Antimony 40%
Natrium Molybdate 40%

| | + | − | A. | B. |
|---|---|---|---|---|
| Pt | Pt | Electrode away | Pt. Carbon | 30 | 20 |
| | Pt | | Carbon | 40 | 25 |

20 Boracic Ac Sulphate 5 Strontia

| | | A | B |
|---|---|---|---|
| Pt − | Car + | Very red | 3 | 8 |
| | | Very red | 8 | 9 |
| | | Very red | 0 | 11 |
| | | White | 1 | 12 |
| | | White | 2 | 12 |

When in white hot tube glass

| | a | 3 | Pt − C + |
|---|---|---|---|
| Very red | 55 | 21 | |
| Very red | 35 | 15 | |
| White | 47 | 29 | |

Chromic acid 20
Caustic Soda 80

2½ ohms
·17168 volt.

| | | |
|---|---|---|
| Boracic Acid 50 | Pt + C − | 5.16 deoxid |
| Morphoxin 25 | C + P − | 15.21 red. |
| Molybdate of Soda | | 36.36 bright |
| | | 54.45 white |
| bubbles of gas at white | | 47.54 white |
| | | 63.48 |
| On Sulphuret Antimony White | | |
| | Sb + C − | 5.11 deoxid |
| | Sb + C − | 8.11 |
| | Cu + C − | 8.13 |
| | Sb + C − | 35.53 |
| Sc Short Circuited 2 minutes | | 35.53 low |

X 11 ohm ·5365 volt.

70 2.75 × .04 = .11
63 1.964 × .0038 = .0074632

r = 78 × .0074632 − 1.5 × .11 = .4171496 / .0025368 = 40 ohms.

.11 × 4 + 1.5 = ~~.11 × 4 × 3/2~~ .11 × 11/2 = .605 volt.

---

47 1.073 × .04 = .04292
58 1.601 × .0038 = .0060838

r = 78 × .0060838 − 1.5 × .04292 = .4101564 / .0368362 = 11 ohms.

x = .04292 × .11 × 1½ = .02146 × 25/2 = .5365 volt.

---

50 1.192 × .04 = .04768
62 1.882 × .0038 = .0071516

78 × .0071516 − 1.5 × .04768 = .4863048 / .0405284 = 12 ohm

.04768 × 12 × 1.5 = .64368 volt.

---

60 1.933 × .04 = .06932
50 1.142 × .0038 = .0045316

(78 × .0045316 − 1.5 × .06932) / (.06932 − .0045316) = r = .3494848 / .0647684 = 40 ohm

.06932 × (4 + 1½) = .06932 × 11/2 = .38126

---

31 .601 × .04 = .02404
40 .839 × .0038 = .0031882

(78 × .0031882 − 1.5 × .02404) / (.02404 − .0031882) = (.2486796 − .03603) / .0208318 = .2264496

= 10 ohm. .02402 × 10 + 1½ = .27623 volt

---

47 1.073 × .04 = .04292
29 .555 × .0038 = .0021109

r = (.0021109 × 78) − 1.5 × .04292 / (.04292 − .0021109) = .1100122 / .0270811 = ~~25 ohm~~ 2½ ohm

.04292 × 2½ + 1½ = .04292 × 4 = .17168 volt.

Saturday 3rd March 1888.

Carbic Sulphate 25
Sulphuric Acid 75
Pt – Cu

| | a | B |
|---|---|---|
| Copper red | 78 | 58 |
| [illegible] | 75 | 55 |
| Nitrogen | 76 | 50 |
| Nitrogen red | 65 | 20 |
| Cu | | |

78 4.711 × 04 = ·18844
58 1.604 × ·0038 = ·0660838

$$r = \frac{78 \times 0660838 - 1.5 \times 18844}{18844 - 0660838} = \frac{1918764}{1823562} = 1 \text{ ohm.}$$

$$x = \cancel{188444 \times 1} \cdot 18844 \times 1 + 1.5 \times 18844 = \frac{\cancel{94412}\ 18844 \times 5}{2} = 47106 \text{ Volt.}$$

New constant of Galvanometer 3/3/88

$\frac{0.630}{15.5 + 1.5} = .0037$ gives unit deflection ∴ C = 0.037 × tan no

$\frac{0.630}{41.5 + 78} = 0.0037$ ∴ C = 0.0037 × tan no.

Chloride of Zinc
Carbic Acid 50

| | a | B |
|---|---|---|
| Pt – Cu Copper heat | 65 | 57 |
| " " | 68 | 62 |

Turned pointer round 9 turns

| | | |
|---|---|---|
| Ag – Cu | 55 | 63 |
| Cu – Cu | 15 | 24 |

68 2.477 × ·037 = ·091649
62 1.852 × ·0037 = ·0696634

$$r = \frac{78 \times 0696634 - 1.5 \times 091649}{091649 - 0696634} = \frac{4056722}{0846756} = 5 \text{ ohms}$$

$$091649 \times 5 + 1\tfrac{1}{2} = 091649 \times \frac{13}{2} = \frac{1191437}{2} = 595719 \text{ Volts}$$

Chlorate of K 30
Carbonate 20

~~Pt~~ Pt-C+

Red
Red

35 22 low
34 56 low
53 61
73 61
31 9
30 15
30 20

1.505
.0037
126 38
5415
.0066785

32.274
.037
22 9 78
9822
.121138

73 3.274 × .037 = .121138
64. 1.505 × .0037 = .0066785

∴ 78 × .0066785 — 1.5 × .121138 = .339216 = .1144895
.121138 — .0066785

.121138
.0064
1211 07
.339216

.0066785
.0534280
467495
.5209230
1211 07
.339216

3 ohms.

.121138 × 3 + 1½ = .121138 × 9/2 = .1090242/2 = .5455121 ohms .1144895

liquified at Brightfield
~~Chlorate of K~~ 25 like molten lead

~~15 20~~ carbon + Pt

Carbonate Soda 25
red lead 15

A.B
45.20 lead combines with Platinum

Chlorate K 35
Bicarbonate 35
Carbonate Soda 20
Phosphoric acid

76 56
~~25 20~~
C + Pt
56

Thick pasty mass
would not melt at any heat

Caustic K 27 Pt – C+
Chlorate K 75
61 48

Caustic K 25 ~~27~~ 25 Pt – C+
Chlorate K 50 ~~45~~ 35
caustic Soda 25

Chlorate 50 15 Pt – C–
Boracacid 50 35 Ag + C–
35

76 4.016 × .037 = .148592
56 1.483 × .0037 = .0056871

$$r = \frac{.78 \times .0056871 - 1.5 \times .148592}{.148592 - .0056871} = \frac{.2207058}{.1429049} = 1\tfrac{1}{2}\text{ ohms}$$

$.148592 \times 1\tfrac{1}{2} + 1\tfrac{1}{2} = .445776$

---

61 = 1.805 × .037 = .0667785
48 1.111 × .0037 = .0041107

$$\frac{.78 \times .0041107 + 1.5 \times .0667785}{.0667785 - .0041107} = \frac{.2204576}{.0626643} = 3\tfrac{1}{2}\text{ ohms}$$

.0667785 × 5.3339 250045.
45 = 1. × .037 = .037
35 = .701. = .0259037.

$$\frac{.78 \times .0259037 - 1.5 \times .037}{.037 - .0259037} = \frac{.1468086}{.0344063} = 4\text{ ohms.}$$

$.037 \times 4 + 1\tfrac{1}{2} = .037 \times \tfrac{11}{2}$ $\frac{407}{2}$ 2035

50 1.192
23 .425

1.192
.024
4768
3576
.0405528
20264
.02664
060792

425
32
850
1275
.00136
78
1088
952
10608
060792
04529
040

040828
5
20264
10132

76 4.046 [illegible] 1/4
551.429.

1429
32
2858
4287
0045728
78
36 58 74
32009 4
35657 84
204816
15176 24
130

4046
024
16064
12048
.136544
68272
.204816

136544
11
150198 4
5
68272
2
3755.

80 5.681 × .024
60 1.733 × .0002

5681
024
22724
17043
.136344
96577
.28973 1

136344
9.
1238380
434596

1.733
.0002
3466
5199
0005 5 4 56
78
4336 4 8
38 8 1 9 2
4 3 1 5 5 6 8
2897 3 1
1418258
188

48° on a = 1.111 × ·04 = ·04444 amps current in amperes on A = ·04444 amps

35° on B = ·731 × ·00366 = ——— B = ·00249556 –

$\frac{x}{r+1.5a} = a \therefore x = a \times r + 1.5a$

$\frac{x}{r+78B} = B \therefore x = B \times r + 78B$

$0 = r(a-B) + 1.5a - 78B = 0$

$r = \frac{78B - 1.5a}{a-B} = \frac{\cdot 19465368 - \cdot 0666}{\cdot 0666 - \cdot 00249556} = \frac{\cdot 12865368}{\cdot 06410444} = 2.07$ ohms

$x = a \times r + 1.5a = \cdot 04444 \times 2.07 + (1.5 \times \cdot 04444) = \cdot 0888 + \cdot 0666 = \cdot 1554$

$\cdot 00249556$
$\quad 78$
$\cdot 01996448$
$\cdot 0174689 \cdot 2$
$\cdot 19465368$

54° on a = 1.377 × ·04 = ·05508 amperes – say $C_1$

62 on B = 1.882 × ·00366 = ·0066999 2 " – $C_2$

$\frac{x}{r+1.5a} = C_1 \therefore x = C_1 r + 1.5C_1$

$\frac{x}{r+78} = C_2 \therefore x = C_2 r + 78C_2$

$0 = r(C_1 - C_2) + 1.5C_1 - 78C_2$

$\therefore r = \frac{78C_2 - 1.5C_1}{C_1 - C_2}$

$\therefore r = \frac{78 \times \cdot 0066999 2 - (1.5 \times \cdot 05508)}{\cdot 05508 - \cdot 0066999 2} = \frac{\cdot 5229376 - \cdot 08262}{\cdot 04838008} = \frac{\cdot 4403376}{\cdot 04838008} = 9.1$ ohms

35° Sulphuric Acid
75 Strong Sulphuric

| | | | | |
|---|---|---|---|---|
| + Cu | Iron Treat | | | |
| – Pt | Rod Treat | 25 | 22 | 51 50 |
| | Very Rod | 48 | 35 | |
| | Nitric | 45 | 31 | 45 38 |

EMF = ·1554 Int res 2.1 ohms

| | | | | | |
|---|---|---|---|---|---|
| – Ag | Nitric | 10 | 10 | | |
| – C | Nitric melted | 23 | 21 | 45 | 59 |
| + Cu | Internal res ohms | 54 | 62 | 55 | 62 |
| + Cu | nitric Treat | 12 | 4 | 0 | 0 |
| – Car. | Cu melted | | | | |
| – Car. | nitric | 23 | 20 | 5 | 5 |
| + Sic. | Ni melted | | | | |

Approx. = 1.377 × .04 = .05508 amperes

48° on B. = 1.111 × .00356 = .00395516 "

$$t = \frac{78 \times .00395516 - 1.5 \times .05508}{.05508 - .00395516} = \frac{.30850248 - .08262}{.05112484} =$$

$$\frac{.22588248}{.05112484} = 4\tfrac{1}{2} \text{ ohms.}$$

$$x = .05508 \times 4.5 + .08262 = .33048 \text{ volt. EMF?}$$

Gas Coke Acid

Nathans Milfoil Oxalique

| | | a | 3 |
|---|---|---|---|
| ± | Carbon Pt | Low heat | 29 | 45 |
| | | Red heat | 50 | 46 |
| | | Black carbon | 51 | 49 |
| | | Bright ~~Red~~ Red | 53 | 50 |
| | | Bright Red SO | 53 | 48 |
| | | ~~White~~ | 47 | 45 |
| | | White Int t = 4½ ohms | 54 | 48 ✓ |
| | | White SS | 55 | 50 |

Bubbles at Red heat

Base Boric Acid
Oxidizer Platinum Nitric

| | a | B | |
|---|---|---|---|
| + — Ag | 7 | 16 | White |
| | 11 | 7 | " |
| | 16 | 16 | " Short C. |

Base Boric Acid.
Oxidizer Nitric.

| | a | B | |
|---|---|---|---|
| + — Ni ~~Pt C~~ | 25 | 25 | white |
| | 21 | 19 | white short Cir. |

| | a | B | |
|---|---|---|---|
| Boric. Nitric | 8 | 10 | white. |
| | 4 | 4 | short Cir. Nitric |

| | a | B | |
|---|---|---|---|
| Zinc Oxalic | 28 | 47 | white |
| | 25 | 43 | white Short Cir |

Sulphate Zinc 80%. Boracic Acid 20%

| | | a | B | After S.C. a | B. |
|---|---|---|---|---|---|
| Positive | Carbon | | | | |
| Negative | Platinum | | | | |
| | Lowered. | 6. | 20 | 21. | 45 |
| | Bright red | 16 | 43. | 14. | 43 |
| Pos N | Lowered | 0 | 0 | | |
| Ag C | Bright — | 0 | 0 | | |
| Nic P. | melted | 0 | 0 | | |
| Car N | | 0 | 0 | | |

Began to melt at low red heat. about melted [illegible]
Boils at White heat

| | | | | | |
|---|---|---|---|---|---|
| Iron P } Car P } | Red Heat, | 3- | 15 | 1- | 12- |
| Copper P } Car N } | Poles change during S.C. | 1. | 3. | 1. | 3 |

Cu N Car P.

16 · 287 + · 04 = · 01148
43 · 933 + · 0038 = · 0035454

$$r = \frac{.98 \times .0035454 - 1.5 \times .01148}{.01148 - .0035454} = \frac{.2765412 - .01722}{.0079346} = \frac{.2593212}{.0079346}$$

$\therefore r = 33$ ohms

$$x = .01148 \times 33 + 1.5 \times .01148 = \frac{.01148 \times 33 \times 3}{2} = .56826$$ ohm

Date Substance a B a B + — a B Ptd

Natrium Wolframat 29/45 51 49 C Pt 50.46

B 7.130
61 2.146

7.130
034
28520
21390
·24242
12121
·36363

3/40hm ·24212
9
4 218178
54544

2.146
0032
4292
6438
0068672
78
549376
480704
5356416
36363
1720116
242412

74 3.481
68 2.477

3.481
34
13924
10443
·118354
59177
·177531

2.477
0032
4954
7431
0079264
78
634112
554848
·6182592
177531
·4407282
1104

118354
0079 118354
0079264
1104276

118354
118354

5 130189
·65094

[THIS BOOK WAS USED IN BOTH DIRECTIONS. THE FOLLOWING PAGES WERE FILMED FROM THE BACK END FORWARD.]

| Base | Acidizer | P Electrode | N Electrode | at low heat coarse | at low heat fine | at red heat coarse | at red heat fine | after N.C. low coarse | after N.C. low fine | after N.C. red coarse | after N.C. red fine |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phosphoric Acid | Hydrometric H | Carbon | Platinum | | | 20 | 5 | | | 10 | 28 |
| " | " | Iron | Carbon | | | 60 | 53 | | | 50 | 48 |
| " | " | Copper | Carbon | | | 25 | 30 | | | 33 | 29 |
| " | " | Nickle | Carbon | | | 10 | 18 | | | 15 | 28 |
| " | " | Silver | Carbon | | | 14 | 21 | | | 8 | 17 |
| ~~Sulphur Acid~~ | ~~Electric Acid~~ | ~~Iron~~ | ~~Carbon~~ | | | | | | | | |
| Phosphoric Acid | Chlorohydric | Iron | Carbon | Thick as Maple syrup | | | | | | | |
| " | " | Copper | Carbon | 10 | 28 | 5 | 25 | 8 | 24 | 13 | 40 |
| " | " | Nickle | Carbon | 30 | 55 | 31 | 33 | 21 | 44 | 34 | 35 |
| " | " | Silver | Carbon | 9 | 35 | 25 | 28 | 5 | 24 | 10 | 25 |
| " | " | Carbon | Platinum | 15 | 39 | 10 | 25 | 11 | 20 | 10 | 20 |
| | | | | 5 | 11 | 11 | 25 | 5 | 15 | 3 | 9 |
| Thick as Treacle as Maple syrup | | | | | | | | | | | |
| Phosphoric Acid | Chromic Acid | Nickle | Carbon | 10 | 18 | 22 | 34 | 4 | 10 | 25 | 36 |
| " | " " | Copper | Carbon | 11 | 35 | 36 | 32 | 6 | 20 | 34 | 28 |
| " | " " | Iron | Carbon | 81 | 48 | 57 | 55 | 10 | 36 | 50 | 46 |
| " | " " | Silver | Carbon | 5 | 13 | 8 | 23 | 3 | 16 | 10 | 23 |
| " | " " | Carbon | Platinum | 1 | 10 | 10 | 28 | 2 | 12 | 9 | 25 |

Great chemical action on adding Chromic Acid to Base

| Gain | Cricibles | Pulverizer | Mt. Oxide | a | Low Heat b | a | Red Heat b | a | Short cherry b | a | Short Cherry b |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Plumbago | Parkinson & Se | Iron | Carbon | 5 | 30 | 48 | 50 | 33 | 55 | 48 | 45 |
| " | " " | Copper | Carbon | 25 | 44 | 43 | 45 | 15 | 29 | 36 | 39 |
| " | " " | Nickle | Carbon | 3 | 1 | 25 | 38 | 1 | 3 | 20 | 38 |
| " | " " | Silver | Carbon | 8 | 26 | 35 | 43 | 5 | 15 | 25 | 40 |
| " | " " | Carbon | Platinum | 0 | 0 | 13 | 13 | 0 | 0 | 13 | 15 |
| No Chemical action when Peroxide added to Sulphur | | | | | | | | | | | |
| Iron | Parkinson Sim | Iron | Carbon | 35 | 53 | 40 | 38 | 26 | 48 | 27 | 37 |
| | " " " | Copper | Carbon | 13 | 34 | 20 | 33 | 9 | 8 | 14 | 30 |
| | " " " | Silver | Carbon | 6 | 5 | 12 | 29 | 4 | 5 | 10 | 23 |
| Pulverized Coal | | Nickle | Carbon | 3 | 11 | 9 | 22 | 1 | 9 | 10 | 23 |
| | | Platinum | Carbon? | 1 | 2 | | | 0 | 3 | | |
| Platinum cleaned with Fire | | | Platinum | | | 5 | 20 | | | 3 | 18 |
| Sens. of Iron Oxide. 4 as from Iron Oxide | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Zone Prospecting Area | Geologist Carbonic Acid | Iron | Carbon | | | 1 | 5 | 3 | 7 | | | Signature Thos Robinson Sigmund Pickle J. Mauss |
| " | " | Copper | Carbon | | | 13 | 43 | 10 | 49 | | | |
| " | " | Nickel | Carbon | | | 10 | 26 | 6 | 10 | | | |
| " | " | Silver | Carbon | | | 5 | 23 | 3 | 18 | | | |
| " | " | Platinum | Carbon | | | 3 | 1 | 1 | 0 | | | |
| Zone Prospecting Acid | Geologist Carbonic Acid | Iron | Carbon | | | 4 | 24 | 7 | 25 | | | Sigmund Pickle Thos Robinson J. Mauss |
| " | " | Copper | Carbon | | | 25 | 50 | 22 | 47 | | | |
| " | " | Nickel | Carbon | | | 7 | 18 | 1 | 15 | | | |
| " | " | Silver | Carbon | | | 5 | 25 | 4 | 21 | | | |
| " | " | Carbon | Platinum | | | 3 | 30 | 5 | 29 | | | |
| Zone Prospecting Acid | Geologist Carbonic Acid | Iron | Carbon | | | 3 | 11 | 26 | 36 | | | Signature J. Mauss |
| " | " | Copper | Carbon | | | 55 | 51 | 55 | 57 | | | |
| " | " | Nickel | Carbon | | | 7 | 9 | 5 | 10 | | | |
| " | " | Silver | Carbon | | | 11 | 26 | 10 | 25 | | | |
| " | " | Carbon | Platinum | | | 4 | 9 | 3 | 7 | | | |

| | | Cold heat a | b | 2 minutes a | b | Red heat a | b | a | b | Metal |
|---|---|---|---|---|---|---|---|---|---|---|
| | [illegible] | 0 | 2. | 0 | 2. | | | | | Iron Carbon |
| | | 0 | 0. | 0 | 0. | | | | | Copper — |
| | | 2 | 3 | 1 | 2 | | | | | Nickel — |
| | | 0 | 0. | 0 | 1 | | | | | Silver — |
| | | 0 | 0 | 0 | 0 | | | | | Platin — |
| [illegible] | — | 0 | 0 | 0 | 0 | | | | | Iron Carbon |
| Black on copper | Sulphuret Pot | 23 | 41. | 22 | 39. | | | | | Copper — |
| | | 0 | 0 | 0 | 0. | | | | | Nickel |
| | " | 12 | 16. | 4 | 18 | | | | | Silver — |
| | " | 0 | 0 | 0 | 0 | | | | | Plat — |
| [illegible] | [illegible] | 1 | 3 | 1 | .5 | | | | | Iron Carbon |
| | [illegible] | 0 | 0 | 0 | 0 | | | | | Copper Carbon |
| | " | 1 | 3 | .5 | 4 | | | | | Carbon Ni |
| | " | 1 | 2.5 | 2 | 3 | | | | | Carbon Ag |
| | " | 0 | 0 | 1 | 0 | | | | | Carbon Pt |
| Silicate Soda | Bichromate of Pot | 0 | 0 | 0 | 0 | | | | | Iron Carbon |
| | | 0 | 0 | 0 | 0 | | | | | Copper " |
| | | 0 | 0 | 0 | 0 | | | | | Nickel Silver " |
| | | 0 | 0 | 0 | 0. | | | | | Silber " |
| | | 0 | 0 | 0 | 0 | | | | | Platinum |
| | Bichloride of Tin | | | | | | | | | |

On adding oxidizing [illegible] smells like burnt sugar —

| | | Low heat a | b | Bright heat a | b | Red heat a | b | Bright red heat a | b | P. | N. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride [illegible] | Chlorate | | | | | | | | | | | |
| Chloride Zinc | [illegible] | 5 | 15 | 3 | 15 | 40 | 43 | 43 | 45 | Ag | C | |
| | [illegible] | 12 | 21 | 5 | 9 | 40 | 50 | 33 | 45 | Sil | C | |
| | | 3 | 4 | 0 | 1 | 5 | 11 | 7 | 13 | Ni | C | |
| | | 1 | 2 | | 3 | 20 | 43 | 29 | 48 | Cu | C | |
| | | 1 | 2 | | | 15 | 22 | 19 | 20 | Plat | C | |
| Chloride Zinc | Red Lead | 9 | 23 | 10 | 25 | 13 | ~~14~~ | 5 | 3 | Fe | C | |
| | | 3 | 15 | 10 | 22 | 60 | 48. | 55 | 41 | Cu | C | |
| | " | 4 | 11 | 1 | 4 | 20 | 10. | 13 | 10 | Ni | C | |
| | " | 5 | 18 | 3 | 14 | 40 | 25 | 33 | 30. | Ag | C | |
| | " | 1. | 15 | 2 | 11 | - | - | - | - | Pt | C | |
| Chloride of Zinc | [illegible] | | | | | 28 | 23. | 30 | 25. | C. | P. | |
| | Chlorate | 10 | 8 | 16 | 19. | 38 | ~~36~~ | 41 | 37. | Iron | C. | [illegible] |
| | Potash — | 45 | 39 | 47 | 41. | 16 | 18. | 16 | 20. | Cu. | C | cat action |
| | " | 7 | 3 | 7 | 3 | | | | | Ni | C | on adding |
| | | ~~75~~ 30 | ~~78~~ 30 | 6 | 3 | 60 | 37 | 46 | 26 | Sil | C. | oxidizing — |
| | | ~~82~~ | ~~75~~ | ~~83~~ | ~~75~~ | | | | | ~~Plat~~ | ~~C.~~ | |
| | | 2 | 4. | 0 | 0 | 37 | 35 | 35 | 35. | Car | P. | |

76 4-016
83. 8. 16 4.

16064
03183
12878

16064
9
144576

4.016
4
16064
8032
24096

8164
39
73476
24492
03183396
78
3547165
2238672
2483458
4.096
22425278
12878
954732
901146
34.

12878

10½

| | Long | | Short | | Long | | Short | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | a | b | a | b | a | b | a | b | + Vac. | — Vac |
| Dr. Johnson | 30 | 36 | 30 | 33 | 36 | 25 | 25 | 25 | Dron | C |
| | 30 | 35 | 29 | 36 | 16 | 12 | 12 | 8 | Cu | C |
| | 14 | 29 | 9 | 21 | 3 | 3 | 1 | 1 | Ni | C Ni |
| | 25 | 33 | 16 | 13 | 26 | 16 | 18 | 11 | Ag | C |
| | 0 | 7 | 1 | 8 | 5 | 13 | 9 | 17 | C | Pt |
| Dr. Johnson | 21 | 42 | 30 | 42 | 45 | 50 | 41 | 45 | Sn | C |
| | 15 | 36 | 30 | 28 | 40 | 17 | 41 | 36 | Cu | |
| | 5 | 7 | 8 | 20 | 31 | 25 | 25 | 20 | Ni | C |
| | 15 | 23 | 11 | 29 | 23 | 49 | 55 | 41 | Ag | |
| | 4 | 9 | 3 | 5 | 9 | 5 | 8 | 4 | | Pt |
| Dr. Johnson | 5 | 3 | 9 | 5 | 10 | 14 | 11 | 12 | Sn | C |
| | 21 | 23 | 21 | 18 | 11 | 18 | 8 | 17 | Cu | |
| | 3 | 15 | 3 | 17 | 0 | 0 | 0 | 0 | Ni | |
| | 17 | 24 | 8 | 22 | 27 | 18 | 21 | 13 | Ag | |
| | 0 | 1 | 0 | 3 | 13 | 15 | 11 | 24 | Pt | Pt |
| Dr. Johnson | 12 | 38 | 29 | 30 | 17 | 20 | 18 | 13 | Sn | |
| | 28 | 23 | 28 | 29 | 16 | 14 | 14 | 10 | Cu | |
| | 13 | 24 | 20 | 29 | 11 | 9 | 8 | 1 | Ni | |
| | 3 | 4 | 3 | 4 | 24 | 35 | 21 | 29 | C | Pt |
| | 24 | 25 | 18 | 20 | 33 | 34 | 28 | 23 | Ag | |

| | Long | | Short | | Long | | Short | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | a | b | a | b | a | b | a | b | + Vac. | — Vac |
| Dr. Johnson | 3 | 19 | 3 | 21 | 19 | 13 | 15 | 9 | Dron | C |
| | 4 | 23 | 4 | 16 | 29 | 13 | 10 | 3 | Cu | C |
| | 0 | 12 | 1 | 5 | 8 | 14 | 5 | 3 | Ni | C Ni |
| | 4 | 20 | 4 | 19 | 3 | 5 | 3 | 9 | Ag | C Ag |
| | 3 | 9 | 4 | 15 | 13 | 20 | 15 | 23 | Pt | Pt |
| Dr. Johnson | 35 | 27 | 31 | 25 | 23 | 15 | 20 | 13 | Sn | Sn |
| | 15 | 13 | 11 | 10 | 15 | 17 | 16 | 9 | Cu | C |
| | 23 | 15 | 14 | 13 | 33 | 16 | 18 | 13 | | Ni |
| | 11 | 8 | 13 | 10 | 3 | 3 | 4 | 3 | Ag | |
| | 4 | 9 | 1 | 4 | 35 | 20 | 30 | 21 | | Pt |
| | Dron | Dron | allow | and | red | list | with | accent | is | joined |
| Dr. Johnson | 19 | 40 | 30 | 45 | 15 | 15 | 10 | 9 | Sn | C |
| | 28 | 46 | 36 | 46 | 15 | 16 | 5 | 6 | Cu | C |
| | 29 | 30 | 33 | 30 | 0 | 0 | 0 | 0 | Ni | C |
| | 25 | 45 | 11 | 24 | 21 | 21 | 15 | 15 | Ag | C |
| | 8 | 10 | 0 | 4 | 8 | 10 | 8 | 18 | Pt | Pt |
| | | | | | | | | | Dronage | not used |
| Dr. Johnson | 8 | 10 | 8 | 17 | 0 | 1 | 0 | 1 | Sn | C |
| | 3 | 16 | 15 | 26 | 3 | 5 | 0 | 6 | Cu | C |
| | 3 | 9 | 3 | 8 | 1 | 1 | 1 | 3 | Ni | C |
| | 4 | 24 | 5 | 23 | 3 | 15 | 0 | 0 | Ag | C |
| | 0 | 0 | 0 | 0 | 13 | 15 | 16 | 15 | Pt | C |
| | | | | | 13 | 13 | 16 | 15 | C | Pt |
| | Over | | | | | | | | | |
| | Go down and patch short | | | | | | | | | |

| a | B | C a | C B | Red. | | | Iron | Carbon |
|---|---|---|---|---|---|---|---|---|
| 27. | 42 | 30 | 43 | | | | | |

| | | a | B | a | B | a | B | a | B | +ve | -ve |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Boric Acid | Sulphuric | 9 | 30 | 7 | [illegible] | 4 | 0 | 5 | 8 | Carbon | Pt |
| | | | | | | 0 | 3 | 4 | 14 | Ag | |
| | | | | | | 4 | 4 | 6 | 3 | Ni | |
| | | | | | | 0 | 91 | 1 | 8 | [illegible] | Cu |
| | | | | | | 3 | 1 | 3 | 0 | Fe | |

3 ohms

45

73 61

3.274 1.964

.037 .0037

121.
007.
114.

22938 13748
9822

.121 | 505892

.007 | 2668

.12 4.5

121
455
605 187

605
121 114 | 359
242
.187 | 17

605

3.484

.54

Base Boric Acid
Oxidizer Sulphuric off K
very rid { a 14 14.25.25.33
{ 80 0 43.45.55

Carbon + Electrode
Platinum Electrode
~~Absolute~~ hot { 933.25 19.
rid { 345.55 45

Acids { a 20 25 9 11
{ 45 46 33 31

**[ITEM FOUND IN BOOK]**

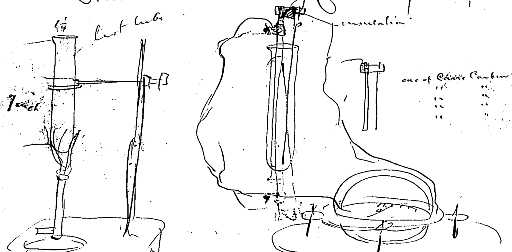
Cable Address "Edison, New York."

From the Laboratory of Thomas A. Edison.

Subject, ______ Orange, N.J. Feby 17 1888

John

Have Gladstone try following —




one of Electric Carbon & silver
" " platina
" " Iron
" " Nickel
" " Copper

ordinary tangent galvanometer coarse wire coil — or both use switch

use following substances

Glacial phosphoric acid, melt, & then put in thimble full of Black oxide manganese — Clean put fresh charge of Glacial phosphoric acid & then put in thimbleful ~~Bla~~ peroxide lead — & so on using as base Glacial phosphoric acid & successively putting in Black ox manganese, Peroxide lead — Chlorate Potash, nitre — Chromic acid — Bichloride tin, peroxide of Iron

**[ITEM FOUND IN BOOK]**

27 February — Lemon color

1st Suggestion: Oxygen gas & Electricity

2nd Sulphur will bleach by passing the fumes under it in a close room with the tobacco in soft order but by combining with the water it makes it taste bitter & smells sulphurous —

By first immersing the leaf in Ammonia water which makes it blackend then giving it a bath by peroxide. My dear sir it will turn a beautiful color but then so much in delight not to be unpleasant & [illegible] is not improved —

Too much heat reddens leaf first round the edge this is spots visible on both sides — called spotting

Too little heat stains facesides of leaf dull brown called sponging

Sulphate of Soda 1 part —
Peroxide Barium 2 part —
dissolve in 50 parts water is a good bleacher but too responsive & takes too much out of it —

By dosing with as much liquor as it will carry without dripping & burning sulphur under it in house in a tight room it will bleach but trouble is to get the smell out — also to smoke it & destroy the sulphur fumes will do it but has to be kept too long

Particulars of samples.

not needs no treatment worth $65 100th

No 2 very fine quality leaf bad color coming in & going out of case. worth $35
If improved worth $125.

No 3 blotched muddy leaf of silky texture $15
If bright worth $65

Hop aircured. worth $11 if bright $100.

No 5 aircured. $9 — $75

$84 is sample to copy from —

Take a few leaves at a time & match them keeping ple aside to compare with after process —
Moisten leaf by wrapping it up in damp cloth in a warm room — This is for leaf tobacco —
Treat the aircured red tobacco in any solution that will not change smoking or chewing qualities or take too much from out of it —

March 19

Suggestion. Take the green leaf & dissolve green stop in it and expose to strong electric light in moist atmosphere saturated with oxygen gas & then raising the heat in dry room for the color. Chlorine gas is a bleacher & might act in place of Sulphur —

[ITEM FOUND IN BOOK]

Buffalo
9th March 1888

J. W. Gladstone

# Table of best results of Pyro Battery Experiments

| Combinations | Temperature | Pole Pick | Pole Stick | Galvanometer Coarse | Galvanometer Fine | Ohms Volts Pole Rs | Volts E.M.F. | Guncotton |
|---|---|---|---|---|---|---|---|---|
| Bisulphate Potash 50% Borax 50% | Red Heat | Carbon | Iron | 20 | 10 | 2½ | .053 | Glycerine |
| Sulphate Soda 50% Borax 50% | Red Heat | Carbon | Copper | 50 | 30 | 2½ | .167 | Castor Oil |
| Sulphate Soda 50% Borax 50% | Red Heat | Carbon | Copper | 50 | 38 | 4 | .176 | Castor Oil |
| Boracic Acid 1/3 Sulphate Lime 1/3 Caustic Soda 1/3 | Red Heat | Carbon | Copper | 50 | 25 | 1½ | .1323 | Sweet Oil |
| Bisulphate Soda 50% Borax 50% | Bright Red Kryolo. | Carbon " | Silver " | 37 415 | 33 41 | 6 6 | .1813 .2405 | Glycerine |
| Boracic Manganese 50% Borax 50% | Bright Red | Carbon | Silver | 69 | 55 | 3 | .4434 | Castor Oil |
| Caustic Soda 25% Boracic Lead 75% | Bright Red | Carbon | Silver | 70 | 56 | 3 | .4578 | Castor Oil |
| Chlorate Potash 70% Caustic Soda 30% | Low Heat | Carbon | Silver | 33 | 63 | 10½ | .6342 | Water |
| Borax 50% Bisulphate Potash 50% | White Heat | Carbon | Platt | 60 | 46 | 3½ | .3206 | Glycerine |
| Borax 50% Boracic Manganese 50% | White Heat | Carbon | Platt | 69 | 63 | 5 | .627 | Castor Oil |
| Borax 50% Boracic Manganese 50% | Bright Red Bright Red | Carbon | Platt | 60 65 | 55 61 | 9 5½ | .4179 .5558 | Castor Oil Castor Oil |

**[ITEM FOUND IN BOOK]**

| Combinations | Temperature | Plate | N Black | Galvanometer Boracic Acid | Ohms Inf Res | Volts Elec | Consistency |
|---|---|---|---|---|---|---|---|
| Sulphate Manganese 60% Borax 40% | Red Heat | Carbon | Plat. | 61 | 55 | 5 | ·4134 | Castor oil Cr Add on finishing heating – |
| Nitrate Potash 50% Borax 50% | White Heat | Carbon | Plat | 66 | 42 | 2 | ·2911 | Olive Oil |
| Sulphate Soda 50% Borax 50% | Red Heat | Carbon | Plat | 66 | 43 | 2 | ·2911 | Olive Oil |
| Nitrate Potash 60% Caustic Soda 40% | Low Heat | Carbon | Plat | 80 | 66 | 1½ | ·6306 | Olive Oil |
| Chlorate Potash 50% Caustic Soda 50% | Low Heat | Carbon | Plat | 75 | 58 | 2 | ·4838 | Water |
| | Dull Red | " | " | 64 | 66 | 8 | ·7307 | " |
| Chlorate Potash 75% Caustic Soda 25% | Red Heat | Carbon | Plat | 61 | 48 | 3½ | ·3339 | Olive oil |
| Chlorate Potash 35% Peroxide Manganese 35% Caustic Soda 20% Glac Phosphoric Acid 10% | Low Heat | Carbon | Plat | 76 | 56 | 1½ | ·4457 | Thick Pasty mass |
| Chlorate Potash 70% Caustic Soda 30% | Low Heat | Carbon | Plat | 68 | 62 | 5 | ·5757 | Water – |
| Peroxide Lead 75% Caustic Soda 25% | Bright Red | Carbon | Plat | 78 | 58 | 1 | ·4706 | Castor Oil |
| Boracic Acid 50% Molybdenate Soda 25% Glacial Phosphoric 25% | White | Carbon | Plat | 47 | 58 | 11 | ·3365 | Glycerine |
| Nitrium Molybdenic 25% Sulphate Strontia 75% | Very Red | Carbon | Plat | 70 | 63 | 4 | ·605 | Castor Oil |

[ITEM FOUND IN BOOK]

| Combinations | Temperature | Pt Crucible | N Crucible | Calcium magnesia Crystal. | Zinc | Ohms Sulphr | Volt E.M.F. | Consistency |
|---|---|---|---|---|---|---|---|---|
| Sulphate Soda 75% Boracic Acid 5% Sand 20% | White Heat | Carbon | Plat | 65 | 65 | 7 | .729 | Molten Iron |
| Sulphate Soda 70% Boracic Acid 5% Sand 20% | White Heat | Carbon | Plat | 70 | 59 | 3½ | .5219 | Molten Iron |
| Cresolic Soda 25% Sulphate Copper 25% Red Lead 25% Sand 25% | Red Heat | Carbon | Plat | 60 | 50 | 4 | .3812 | Molten Iron. |
| Sulphate Soda 90% Boracic Acid 10% | White Heat | Carbon | Plat | 45 | 65 | 19 | .52 | Castor Oil. |
| Sulphate Soda 75% Glacial Phosph. Acid 25% | Bright Red | Carbon | Plat | 55 | 46 | 4½ | .2958 | Glycerine |
| | White Heat | " | " | 54 | 40 | 3 | .2478 | " |
| Sulphate Soda 75% Boracic Acid 25% | White Heat | Carbon | Plat | 74 | 69 | 4½ | .5122 | Molten Iron. |
| Natrium Metaphosphate 75% Boracic Acid 25% | Dull Red | Carbon | Plat | 50 | 46 | 5 | .2816 | Semi liquid |
| | Bright Red | " | " | 53 | 50 | 5½ | .3439 | " " |
| | White. | " | " | 54 | 48 | 4½ | .3308 | Castor Oil. |
| Sulphate Manganese 75% Natrium Metaphosphate 25% | Bright Red | Carbon | Plat | 48 | 35 | 2 | .1534 | Castor Oil. |

The Combinations with Chlorate of Potash and Nitrate of Potash are not satisfactory as there is great Chemical action and the Reaction part boils over the side of the crucible — The Bioxide of lead combination has a tendency at a high heat to form metallic lead which unites with the Platinum —

J. M. Paddock —

[ITEM FOUN IN BOOK]

Cable Address "Edison, New York."

From the Laboratory
of
Thomas A. Edison.

Subject, _____ Orange, N.J., _____ 188

Jan. Gabor 12. 3. 88

A unit defln 0.034 amp.

B - - 0.0032 "

**[ITEM FOUND IN BOOK]**

Cable Address "Edison, New York."

From the Laboratory
of
Thomas A. Edison.

Orange, N.J. 24 March 188

Gentlemen =

Using Carbonate of Soda as a base try with all the Electrolytes Various percentages of the following —

Protoxides of Lead – tin – Copper, Iron Zinc, Barium Strontium, Cadmium Antimony – Bismuth Cerium, Chromium, Tungsten Titanium, Nickel, Cobalt, Molybdenum Manganese, Magnesium, Aluminum

Peroxides, or sesquioxides Lead, Tin, Zinc, Manganese, Iron – Copper

proto Chlorides – Zinc, Tin – Copper – Strontia, Cadmium, Antimony – Bismuth Cerium Chromium Tungsten, Nickel Copper Cobalt Molybdenum, Manganese, Magnesium Aluminum —

Chromates of Lead Tin Zinc, Copper, Iron Manganese, Nickel —

[ITEM FOUND IN BOOK]

Cable Address "Edison, New York."

From the Laboratory
of
Thomas A. Edison.

Subject. _____ Orange, N.J. _____ 188

Then take ~~Chlorat~~ the following ex. 6 acids
Chloride Zinc - Sodium Dihydrogen phosphate,
Di ~~Sodium~~ Hydrogen Arsenate, Boric acid
Hydrogen ~~Potas~~ Potassium Arsenhydrosulphate, Hydrogen Borate.
~~Hydrogen~~ Potassic Sulphate, Ammonium Hypophosphate
~~Nitrate~~ Ammonia — Water Glass — ~~Chloride~~
Soda -

The oxidizing things are as described on 1st page
Peroxide lead, peroxide or black oxide manganese
Chlorate Potash, Nitro, Chromic acid - Bichromate
Potash, Bichloride tin Peroxide of Iron - Permanganate
of Potash - Carbolic acid - Sulphuret of Potassium,
Red lead - Heat the test tube up
just as high as it will stand,
Stir the liquid with the Electrodes,
& take the deflection on both coils -
See they start from Zero - see if there is
much polarization by holding current closed
for little while - ~~Have him make notes~~ make notes
he can do it in my room Edison

[ITEM FOUND IN BOOK]

Sulphuret of iron
" Lead.
Tin
Zinc.

— Sulphur —

[ITEM FOUND IN BOOK]

From the Laboratory
of
Thomas A. Edison.

Orange, N.J. _____ 188

Zinc Boracic — melts at high heat.

Chloride Strontia fuse high heat

Natrium Wolframic melts very high heat,

Sulphate Potassia melts very high heat

Plumbic Hypophosphorous — at first decomposes afterwards melts to a glass

Chloride Lead — fuse high temperature —

Oxidizer — Cupric Nitrate —

Sulphate Soda

From the Laboratory
of
Thomas A. Edison.

Orange, N.J. _____ 188

Calcium Lacto phosphoric — melts high temperature —

Strontium Bromic; " "

Natrium Saccinic — high heat

Soda Fluoride " "

Oxidizer — Natrium Hypermanganate, High heat

Natrium Iodic

Soda Molybdenite, "

Natrium Bitartrate "

Natrium Arsenicic "

Stannum Sulphuric Oxydat — "

[ITEM FOUND IN BOOK]

From the Laboratory
of
Thomas A. Edison.

Orange, N.J. _____ 188

Arsenic sulphide melts
Easily glassy.

Sulphuret antimony melts
high temperature

Oxidizer — Picronitric of ammonia
Picrate of potassa

Phosphate of magnesia. fuses high
heat.
Sulphite. Magnesia fuses high
heat.

Oxidizer — Zinc Picronitric,

From the Laboratory
of
Thomas A. Edison.

Orange, N.J. _____ 188

Kalium Stibium

[ITEM FOUND IN BOOK]

April 7th

At Louisville they bleach wrappers – viz remove the color one degree brighter & so it permanently. Called the sparkling process by alcohol – but it is sticky. –

Naturally cured yellow as spl in tin foil loses 15% color in being manufactured

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Try aqueous solution acetate Potash + Chlorine –

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2nd Oxalic Acid also with its alkaline salts –

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Chlorine cannot be used to bleach substances containing nitrogen than becoming yellow by its action – $2HCl$ =

Faraday

Charcoal if made positive pole in dilute solution $K_2SO_4$ is capable of combining with the O evolved there & consequently unites with it producing $CO_2$ & Carbonic Acid in abundance

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Mark cotton plate with hypochlorite & just clean [illegible] 1/12 way to add it together) subject it to strong pressure in Press before well powdered $PbO_2$ at top & bottom of cake.

Mark Aluminic plate & by the Carrying Circle Mention Engraving

[ITEM FOUND IN BOOK]

Particulars of Bleaching Tobacco.

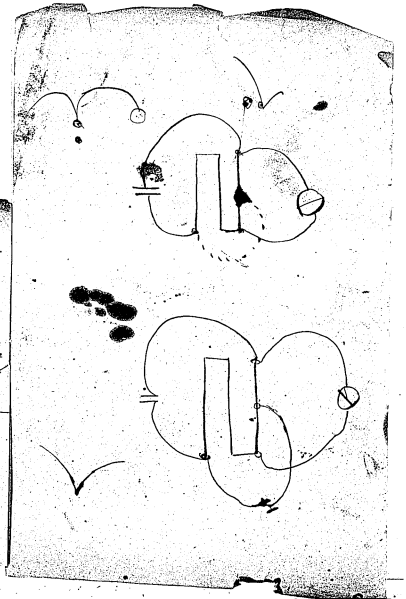
Materials used for 1 ℔ with cost.

| | | |
|---|---|---|
| 7oz Chlorate Potash | 18c ℔ | 8c |
| 2 pg Cane Sugar | 6c ℔ | 1½ |
| 10 pg Nitric Acid | 6c ℔ | 4c |
| 14 g Water | | |
| | | 12½c |

per lb

or say 25c per ℔ - - - - - - - - -

The leaf does not lose weight - - -



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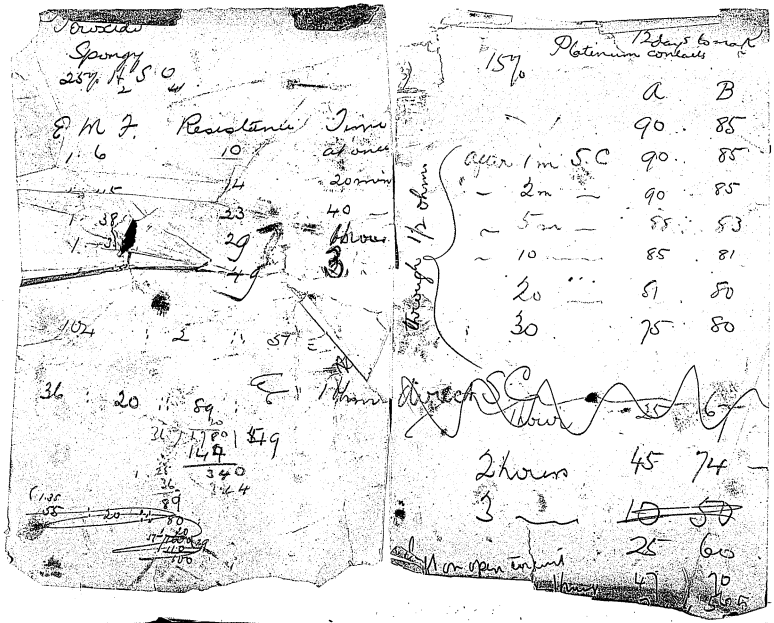

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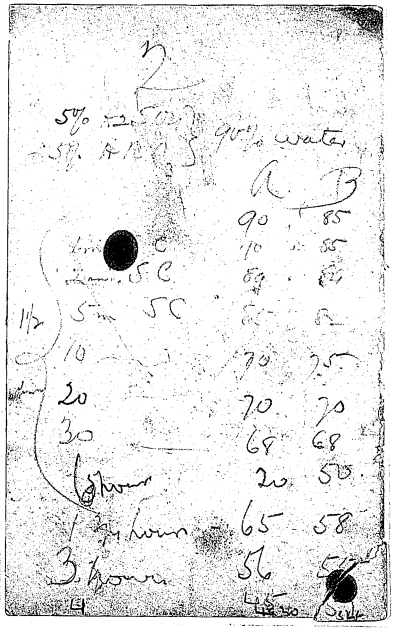

| | A | B |
|---|---|---|
| | 90 | 85 |
| | 70 | 55 |
| | 69 | 60 |
| | 60 | 8 |
| 10 | 70 | 75 |
| 20 | 70 | 70 |
| 30 | 69 | 68 |
| 1 hour | 20 | 50 |
| 1½ hour | 65 | 58 |
| 3 hours | 56 | 5 |